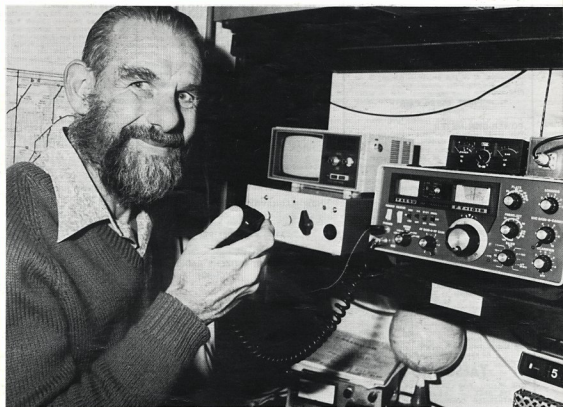


amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 46, No. 7

JULY 1978

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COVER PHOTO

Roy Hartkopf VK3AOH shows us part of his shack. Roy is editor of the YRS publication "Zero Beat" and a current VK4 Division Councillor.
See Roy's article "An 80 Channel Synthesiser" on page 7.

Photo by Reg Goudge.

HAM

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5	27.065	15	27.185
6	27.085	16	27.195
7	27.095	17	27.205
8	27.105	18	27.225
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amateur radio



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QSP — RADIO ACTIVITY DOWN UNDER

At one time, the Antipodes was the end of the earth — a place where only the unwanted were sent — as for the west — well, did it exist? and if it did, it was likely that not much happened there anyway!

Some would argue that a similar situation exists even today. As far as amateur radio is concerned, they are wrong, for things are happening in the Antipodes and the rest of the amateur world is "reading the mail".

The last few years have seen a notable increase in activity in our higher amateur bands, in some cases culminating in a number of world records being smashed.

Out west, on 25th January, 1977, VK6WG and VK5OR exchanged signal reports on 1296 MHz to establish a new world record over a distance of 1855 km. Not resting on their laurels, the same team then proceeded to establish, about 12 months later, yet another world record, this time on 2305 MHz on 17th February, 1978.

Australia is also claiming a world record for the 432 MHz band. The contact between VK6XY and VK3ZQV on 22nd February, 1978, being over a 2583 km path.

The 432 MHz EME contact between VK2AMW and G3LTF on 30th February, 1974, is also claimed as a world 70 cm EME record.

More recently VK8GB worked JH6TEW on 144 MHz, contact for which the JARL is rewarding VK8GB with a suitable memento of this first VK-JA 2m QSO.

News has also reached us (although unconfirmed at this stage) that a substantial distance (over 160 km) has been achieved in VK4 on 10,000 MHz.

Amateur radio is certainly alive and well down under. Activity is generally at an all time high in most of our share of the Spectrum from the Novice Segments of 80m to ATV and SSB on 23 cm.

Peter Wollenden VK3ZPA/NIB, WIA Federal Vice-President. ■

(Before a contact can be listed as an Australian (or world) record, a claim must be made in writing to the Federal Office of the WIA. All claims are processed by the VHF Advisory Committee in conjunction with an independent investigator.—Ed.)

QSP

JOTA

In his report on 20th JOTA in October 1977 the Scout Association National Organiser, VK4ZNI, writes: "As has been the case over the past 20 years, the amateur radio operators have been magnificent in their generosity in making available their time and their equipment to help Scouts and Guides enjoy the full pleasure and excitement of this annual international Scouting activity. I sometimes wonder if many Groups realize how deeply indebted we are to the members of this fine organization for their splendid efforts. Becoming more popular are the Area and District participants with the wonderful assistance of local amateur radio clubs who regard it as a challenge to set up a fully operational amateur radio station in the portable mode and do it to perfection. It is pleasing to see that so many members of these clubs remain to enjoy the week-end camping with the Districts they assist."

WPX 10 METRE RECORD BROKEN

In the recent WPX world-wide contest, Steve VK3JOT broke the standing world record on ten metres for a single operator single band station, set by a KH6 in 1970. He was 1.02 million at 230 prefixes and Steve's score in February was 1.5 million at 296 prefixes for the 30 hours. He had 1750 QSOs.

GOLD COAST HAMFEST 1978

Will take place at Mudgeraba, four miles inland from Surfers Paradise, from 11.00 to 23.00 on 29th July. Check on Gold Coast Repeater Ch. 42 for directions.

RECORDS

"On Saturday, March 4th, George Luxon VK5RX accompanied by his charming wife were guests of honour at a small dinner attended by Divisional Councillors and wives. George has been QSL manager of the Division for 47 years." — April 1978 SAWA Journal.

CALL SIGN PREFIXES

According to May 1978 Radio Communication the ITU has provisionally allocated J4A-J4Z to Greece and J5A-J5Z to the Republic of Guinea-Bissau.

SPECIAL EVENT STATION

For those who like collecting cards from special events station operations try GB3TCF on 26th-27th August, 1978, on HF bands as well as SSVT and RTTY (by request). It will also be on Monday, 28th August, for a short period. The station will be operated from the National Town and Country Festival in the Royal Showground at Stoneleigh near Coventry. QSL Manager G4GJL, 58 Witherford Croft, Solihull, Wares, UK.

DX RECORDS — RHF

Ham Radio April 1978 reports KP4EQR worked LUBDIN on 2 metres for a distance record of 6300 km (3940 miles). YV5ZZ has heard LU3AAT on 432.1 MHz but no contact resulted. The distance in this case would be about 5000 km. The date would be about mid-February.

PREFIXES — USA PACIFIC AREA

Ham Radio April 1978 reports KH1 to KH0 are the new prefixes for US Pacific Islands but in some places which are not FCC administered, such as KC6 and KX6, there might not be any changes. KPI to KPD will identify Caribbean areas.

IMPORTS

"Amateurs are advised that the importation of certain VHF transceivers previously prohibited because of an equivalent set being made in New Zealand no longer applies. The importation of all types of amateur equipment is now available to all licensed amateur operators." — Break-In, March 1978.

GRAPEVINE

Heard P. and T. in VK3 have to fix their morse machine so they can send proper morse in the exam. Are their faces red? ■

WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:

- VK1 Brig. R. K. Roseblade VK1QJ
 VK2 Mr. T. I. Mills VK2ZTM
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Staff: Mr. P. B. Dodd VK3CJF, Secretary.

Part-time: Col. C. W. Perry, Mr. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142.
 2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:

- President** — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radcliffe VK1TR
Broadcasts — 3570 kHz & 146.5 MHz: 10.00Z.

NSW:

- President** — Mr. T. I. Mills VK2ZTM
Secretary — Mr. A. Mackenzie VK2ZIM
Broadcasts — 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 8).

VIC:

- President** — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts — 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD:

- President** — Mr. A. J. Aarse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts — 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:

- President** — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts — 1820, 3550, 7095, 14175 kHz: 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:

- President** — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts — 3600, 7080, 14100, 14175 kHz, 52.695 and 2m (Ch. 2): 01.30Z.

TAS:

- President** — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessey VK7MC
Broadcasts — 3570, 7130 kHz: 09.30 EST.

NT:

- Secretary** — Mr. Henry Andersson VK8HA
Broadcasts — Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 23.00Z. Slow more transmission by VK8HA on 3.555 MHz at 10.00Z almost every day.

Postal information:

- VK1 — P.O. Box 46, Canberra, 2600.
 VK2 — 14 Aitchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h)).
 VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
 VK4 — G.P.O. Box 538, Brisbane, 4001.
 VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
 VK6 — G.P.O. Box N1002, Perth, 6001.
 VK7 — P.O. Box 1010, Launceston, 7250.
 VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 3717, Winnellie, N.T., 5789.
Slow more transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAU

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

- VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
 VK2 — QSL Bureau, C/- Hunter Branch, P.O. Terahall, N.S.W. 2284.
 VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
 VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
 VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
 VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 27 Belair Road, Torrens Park, S.A. 5062.
 VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
 VK7 — QSL Bureau, G.P.O. Box 3710, Hobart, Tas. 7001.
 VK8 — QSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
 VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

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QSP

A SAGA OF ACHIEVEMENT

The book "A Saga of Achievement" written by Bon Hall tells the RAAF Radio story and was released on 2nd April, 1978.

Pictured at the book's launching are, l. to r. standing, Bon Hall (author), Vaughan Marshall, W. (Bill) Taylor, Bob Cunningham, Fred Bibby, Seated, l. to r., Clem Blakeley, Arthur Tinkler. Max Hull took the photo.



TVI, BCI — T817

Resident of one of Tasmania's smaller cities complained to the appropriate authority that his telephone service was suffering severe interference — conversations inward and outward had to be con-

ducted against a constant background of music. A technician sent to the premises confirmed that the complaint was genuine.

Knowing that 27 MHz operations sometimes cause various types of interference, the technician then turned his attention to the surrounding skyline for any indication of a "broadcasting station". Sure enough, a couple of antennas could be seen in the back garden of a house a few doors away, and were worth investigating. However, the occupier turned out to be an amateur operating strictly within the terms of his licence. The trouble was eventually traced to a "music while you work" establishment who somehow had got their wires crossed and were providing an unwanted programme to an unappreciative "subscriber".

The "broadcasting aeriels" were a tri-band beam and an 80 metre dipole.

— From Dick Goslin VK3SV.

STATISTICS

According to P. and T. Department returns at 31st March, 1978, the Amateur Radio stations in Australia and Territories (23) totalled 8960, of which 5268 were full calls, 2613 limiteds and 1056 Novices. The greatest number of antennas were in New South Wales (3118), followed by Victoria (2580), Queensland (1035), South Australia (982 plus 85 NT), Western Australia (649), Tasmania (296) and ACT (192). In the same return the number of CB licences was shown as 157,205. ■

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Cables: WELKIN, MELBOURNE. Telex: AA34341.
NSW: 20 The Strand, Penhurst, NSW., 2222. Ph: 570-1392

WIANEWS

During May one meeting of the Executive was held and one meeting of the Joint Departmental/WIA Committee.

The artwork for six coloured display posters, each about 600 x 500 cm, has been completed. The biggest problem now is to have 20 or 30 copies of each produced at a reasonable price. This is too small a run for litho and not an economical run for professional screen-printing. Mrs. J. Scott was the artist. Any ideas for producing these posters, perhaps as a school project, would be very welcome.

FEDERAL APPOINTMENTS

The meeting of the Executive, being the first following the Federal Convention, appointed various Federal officers subject to Divisional and individual approvals. Many were unchanged from last year. These were Michael Owen VK3KI as IARU R3 Liaison Officer, Alf Chandler VK3LC as Fed. Intruder Watch Co-ordinator, Ken Seddon VK3ACS as Chairman, Fed. Repeater Sub-Committee, Max Hull VK3ZS as Fed. Historian, Ray Jones VK3RJ as Fed. QSL Manager, Brian Austin VK5CA as Federal Awards Manager, Charles Walker VK2BXX as Chairman Fed. RTTY Committee, but since resigned owing to other pressing commitments, and Peter Wolfenden VK3ZPA as Executive Vice-Chairman and also Chairman VHFAC. Keith Roget VK3YQ was appointed as Fed. Hon. Treasurer but has since had to resign on transfer overseas for an extended period.

New appointments were Bob Arnold VK3ZBB for Satellites, Wally Watkins VK2ZNN as Fed. Contest Manager, and Ron Henderson VK1RH as Fed. WICEN Co-ordinator. Once again no name came forward for Fed. EMC Co-ordinator.

ARRL HANDBOOKS

The special price 1977 ARRL Handbooks had sold very

rapidly and the Executive were most fortunate in being able to secure a further supply which should arrive about September.

NOVICE BROCHURE

The Novice No. 1 brochure was duplicated and copies are now available. The price is 65 cents each, post paid. The brochure contains a copy of the official Novice syllabus, the WIA officially endorsed study guide and notes on Novice operating conditions. Work on the production of a bank of typical Novice questions is continuing.

CUSTOMS

Work also continues on Customs matters relating to HF beams and 70cm transceivers.

NOVICE

A number of Novice licensing questions were discussed with the Department in the Joint Committee. A letter went to the Department requesting 3625 kHz as the top segment limit for Novice on 80m. The vexed question of Novice examinations in centres distant from capital cities was discussed at length and it appears that this is a problem recognised by the Department and a Press Release on the subject was promised.

The Department categorically stated that RTTY and SSTV modes were not authorised for Novice licensees and were never contemplated. In fact the removal of FM as a mode was not being done. The inclusion of these modes would have necessitated examination questions on them. The WIA also raised the question of the inspection of Novice equipment at Departmental centres. It appears that the promises of reduced licence fees for pensioners is still under examination in relation to the definition of a pensioner. Morse speeds were again discussed and it appears that the Novice morse in future will be done by hand keying which hopefully will resolve the slow ITV standard morse machine-generated. On the question of speed endorsements, the Department regretted inability to cope with this because of the staff situation. The question of reciprocal licensing is to be updated, vide the letter in AR for August 1972. ■

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80 CHANNEL SYNTHESIZER

Roy Hartkopf VK3AOH
34 Toolangi Rd., Alphington 3078

This article follows on from one published in AR (March 1976) which outlined the development work being done on an 80 channel synthesiser for the 2 metre band.

50 kHz apart through the two metre band. The output of the synthesiser is controlled by two thumbwheel switches and the numbers on these indicate the WIA band plan channels on two metres. So if you want channel 42 for instance, you just set the

thumbwheel switches to 42 and you are in business. This should be ideal for mobile work. The synthesiser has been tested on air with a mock-up exciter giving about 50 mW on two metres and there is no sign of noise or instability from the VCO.

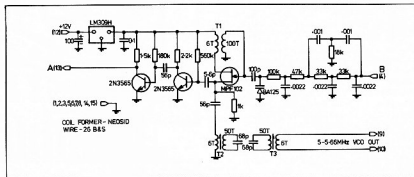


FIGURE 2: VCO Circuit.

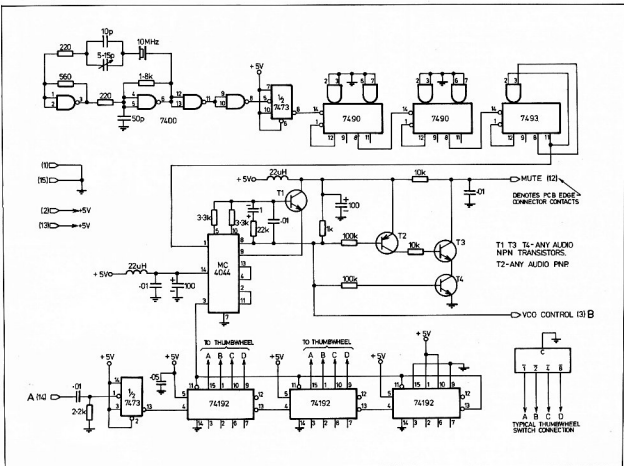
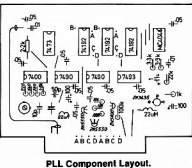
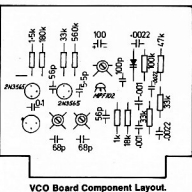


FIGURE 1: Phase Lock Loop Circuit.

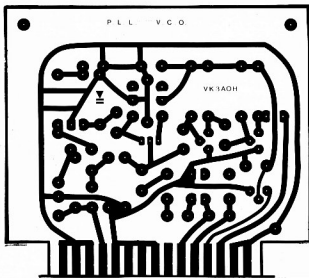


BLOCK DIAGRAM

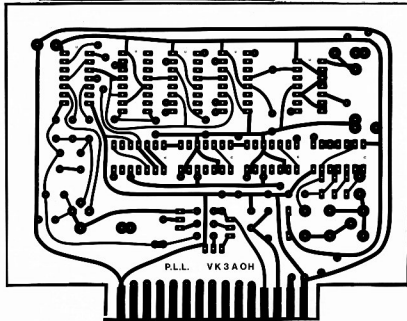
Fig. 1 is a block diagram of the PLL (phase-locked loop) system. The reference frequency is generated by a 10 MHz crystal and a 7400 is used as the oscillator. This is divided by two, ten, and twelve, coming out at 4.1666 kHz. This is fed into MC4044 comparator. The comparator supplies a control voltage through a filter to a BA125 varicap which controls the frequency of the MPF102 VCO (voltage-controlled oscillator). Part of the VCO output is picked off and fed to a double tuned circuit which gives a broadbanded output to the heterodyne and multiplier sections which Neville VK3BDW is at present developing. The VCO frequency is also amplified through two 2N3565 transistors so that it becomes suitable for driving half of a 7473 on the PLL board. The frequency is divided by two and then divided as desired by two programmable dividers controlled by the thumbwheel switches. The total division in the 74190 divider may be between 600 and 699. The final output of this division must be the same as the reference frequency, namely 4.1666 kHz. If it is not then the comparator changes the voltage on the varicap until the VCO frequency is such that the output does come to 4.1666 kHz after going through the divider chain. The mute line is used to disable the transmitter during the start period when the loop is unlocked as occurs when changing frequency.

POWER SUPPLIES

The main logic on the PLL board is supplied in the usual way from a 5 volt regulated supply (a LM309K is quite suitable) but the VCO board requires a separate



VCO
Board No. 2
Full Size —
Copper
Side.



PLL Board, Full Size — Copper Side.

regulated supply. LM309H was used, mounted on the board. Even though the main supply is regulated it is not good enough to use this for the VCO since the slightest variation in the supply voltage here causes noise and instability in the VCO output.

Figures 2 and 3 give the layout of the main components on the PLL and VCO boards respectively and Figs. 4 and 5 show the copper side. The crystal used is the small size (K type), not the D type and the circuit in which it is to be used should be given to the manufacturer to make sure the crystal can be brought to exactly 10 MHz as the whole accuracy and stability

of the system depends on this crystal.

FURTHER DEVELOPMENT

The remainder of the two metre transceiver is being developed along the lines described in the article of March 1976 although it has not been found necessary to tune the multiplier. The transceiver will be for the FM band 146 to 148 MHz.

By altering the division ratio there is no reason why the same arrangement could not be used for other purposes. For instance if the reference frequency was divided down to 5 kHz the system could be used to give 10 kHz spacing through the HF band and so on. ■

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CONVERSION OF HF TRANSCEIVERS TO THE SIX METRE BAND

Geoff Wilson VK3AMK
7 Norman Ave., Frankston 3199

During recent years there has been a very noticeable move away from the concept of homebrewing for the 6 Mx band. The reasons for this have been many, the change to SSB as the main mode has imposed greater stability requirements than previously and the cost and scarcity of suitable components have made commercial equipment more attractive.

Regardless of how well a home-made rig may perform it is impossible to produce anything that will have any resale value later on. Despite the variety of excellent commercial 6 Mx units available now most fall badly in one important aspect, lack of realistic output in relation to their cost. With the exception of equipment such as the IC502 in most cases the cost is similar to that of a multiband HF transceiver and yet the power output is almost invariably in the 10 watt PEP range. For most purposes this level of output is inadequate for really serious DX work unless everything is going for you, and this includes your antenna, band conditions, local terrain and the general efficiency of the station at the other end. Probably the only commercial units to run reasonable power levels were the Heathkit SB-110A and the Swan 250 but the numbers of these units in VK could probably be counted on the fingers of both hands (and then have some to spare!).

At the present time there are many good secondhand HF transceivers available which can be very easily converted to operate on 6 Mx with only minimal additional parts and these transceivers will then give a very good account of themselves on 6 Mx up to around the 100 watts PEP level at least. Probably the total outlay would not exceed half the cost of a current model 6 Mx transceiver with a 10 watt PEP output.

A careful look at the circuit of the average HF transceiver will show that the only difference between bands is in the

components and crystals used in the transmitter final mixer, driver and receiver RF amplifier and first mixer stages. All other sections use components common to all bands. By changing the above sections the transceiver can virtually be put on any frequency up to 60 MHz or so which is about the limit of reasonable efficiency with the final tubes. If the conversion is done carefully and a record kept of each change made there would be no reason why reconversion couldn't be done later if the need should arise. Figure 1 shows the essential parts of a normal HF transceiver and Figure 2 shows the additional sections required to give 6 Mx operation. As each type of transceiver varies from others to some degree I won't cover the conversion in detail but rather in broad outline only. Anyone contemplating such a project will more than likely be already conversant with VHF techniques and likely pitfalls. There is a wealth of information in the various handbooks to guide anyone as to circuit details, e.g. ARRL Handbook, etc.

Probably the first decision to be made will be which band or bands to use as the tunable IF? This will depend on several factors. Firstly do you require a small range, say 500 kHz, or do you wish to cover the full 50 to 54 MHz? A 500 kHz range will probably mean one extra crystal while to cover 4 MHz will more than likely require eight crystals. Secondly, if say 28

MHz is to be used as the tunable IF, is the transceiver sensitivity sufficiently good enough? These questions will have to be answered before proceeding. Also where additional oscillator frequencies will be used it will pay to do a check of the entire frequency chain to make sure there won't be some unwelcome beat in the middle of your favourite section of the band.

The most simple conversion proceeds as follows: Insert a 6 Mx receiving converter between the antenna relay and the existing receiver input, the receive section of the transceiver is now effectively a 6 Mx receiver, using one or more of the former HF bands as the tunable IF. The output of the final transmit mixer is then removed from the driver stage and an additional mixer stage is added. This stage mixes the tunable IF transmit frequency with the output from the 6 Mx receiving converter oscillator. Here it may be necessary to add a buffer stage following the oscillator if the signal level is low, again this will vary from case to case. This mixer stage is tuned to 6 Mx and then fed to the former driver stage which also must now be tuned to 6 Mx. Existing components could probably be re-arranged to suit here. The final stage is then tuned to 6 Mx and the transmitter retuned for peak output at 6 Mx. It will of course be necessary to watch for any HF components

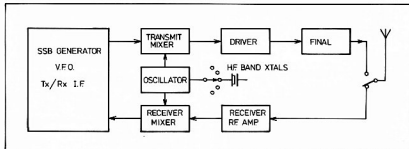


FIGURE 1: Typical HF Transceiver Block Diagram.

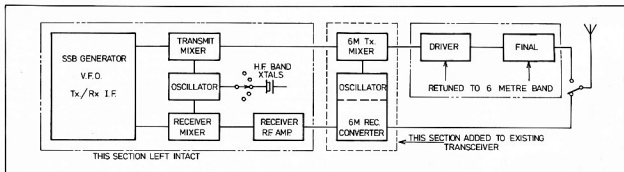


FIGURE 2: Block Diagram of Converted HF Transceiver.

which may affect VHF operation, but these should be few and easily spotted. Pay particular attention to items such as bypassing, chokes, lead inductance, etc., as these sometimes degrade even 10 Mx performance.

There would appear to be no reason at all why the new stages shouldn't be solid state when used in older valve type equipment and in fact the smaller size may make this essential. A typical trans-

ceiver suitable for conversion would be, say, an FT-200 which today would normally be available secondhand at reasonable prices. ■

VERTICAL — HORIZONTAL ANTENNA ROTATOR

Maurie Batt VK3-L3062
R.S.D. Rokewood Junction 3351

With the ever growing popularity of 2 metre repeaters and activity on the tuneable end of the band, it was decided to make one efficient antenna serve both modes, thereby reducing the costs by half. The rotator described will do just that and at very little cost. The original rotator was constructed by the author and has been in use for some considerable time and during that time no problems have arisen.

However, the rotator described has a few desirable modifications added. Constructors not having the necessary equipment available, can get the welding and the bushes machined at a moderate cost. The rest of the work is quite simple.

The antenna used by the author is a KLM 144-148 MHz, 11 elements on a 1 inch boom. All measurements quoted are for an antenna with a 1 inch diameter boom.

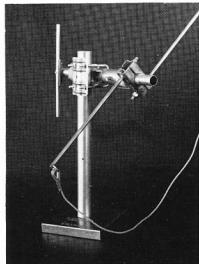
PARTS LIST

- 10" length of aluminium tube — 1½" OD not less than 16 SWG.
- 13" length of aluminium tube 1½" OD 17 SWG.
- 3 — ¼" gutter screws 1" long.

- 5 — ¼" nuts.
- 2 plastic or rubber furniture leg caps 1½" diameter.
- 4" length of 1½" graphited impregnated nylon rod.
- 4" length of steel rod.
- 28" length of ¾" steel rod.
- 2 heavy duty TV antenna clamps or Vee Blocks.
- 2 — ¾" nylon stop nuts.
- 2 cable eyes.
- 1 special mast — boom clamp, TV antenna vertical mounting bracket or universal clamp.

METHOD

Machine the nylon rod down to a good



Vertical position.

tight fit into the large tube. Bore out to a working clearance to accommodate the 1½" tube. Cut in half to form two bushes 1½" long. Press one into each end of the large tube. Insert the 1½" dia. tube through the bushes. It should fit snugly in the bushes but be free enough to turn without any binding. High spots can be removed with a piece of abrasive cloth on a dowel.

Remove the 1½" tube. Take the large tube and measure 2" down from one end

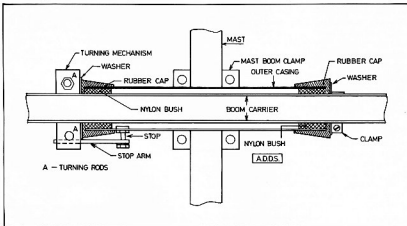


FIGURE 1: Section of Rotator.

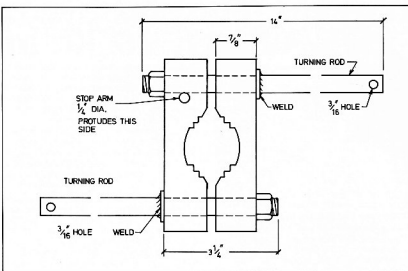


FIGURE 2: Turning Mechanism.

and scribe a line around the circumference. On this line mark two stops $1\frac{1}{4}$ " apart. Centre pop, and drill out to take a $\frac{1}{4}$ " screw. Take two of the gutter screws and insert them through the holes from the inside of the tube. Secure each screw with a nut.

From an odd piece of thin tubing, about $\frac{3}{16}$ " dia., which will slip over the threaded portion of the screws, cut two lengths long enough to leave enough thread to engage a nut. Place one of the pieces over each of the screws and tighten down with a nut. At this point check that the $1\frac{1}{4}$ " dia. tube will not foul on the screw heads. If so, remove and file the heads down to clear. When tightening the nuts on the two screws some distortion of the tube may occur and cause high spots in the bushes. These can be removed as stated above.

Now a hole has to be cut in each of the rubber caps to form a weather-proof seal. To cut a hole perfectly concentric to ensure a good weather-seal the best way is to take the $\frac{1}{16}$ " tube and file a chamfer on the inside of one end of the tube to form a cutting edge. Place one of the caps on the end of the large tube and ensure that it fits tight up against the bush. Insert the chamfered end of the tube through the bushes in the large tube and with the end of the rubber cap pressed up against something solid, exert pressure and with a turning motion of the smaller tube proceed to cut the hole. When completed, carry out the same procedure on the other cap. Cut the chamfered end off the tube and clean off any roughness.

From a scrap of aluminium sheet about 16 SWG fabricate two washers $1\frac{1}{4}$ " OD with a $\frac{1}{16}$ " hole. A $1\frac{1}{16}$ " chassis punch would be ideal to cut the hole and the hole would only need to be filed out slightly to fit onto the tube.

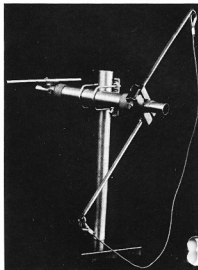
Make up a clamp from the same material

about $\frac{1}{2}$ " wide and $1\frac{1}{2}$ " dia. Drill the lungs out to clear a $\frac{1}{4}$ " screw. This completes the work on the barrel section.

Remove the U bolts from the TV antenna clamps as these are not required, leaving the vee blocks. At this stage it might be as well to mention that the TV clamps used by the author were $3\frac{1}{2}$ " long on the sides and about $\frac{3}{4}$ " deep and about $1\frac{1}{2}$ " across the two flats. Take the $\frac{3}{16}$ " rod and cut into two equal halves and cut a $\frac{3}{16}$ " whitworth thread $1\frac{1}{2}$ " long on one end of each of the rods. Weld or braze a rod into each of the clamps, see detail in Fig. 2. The position of the hole for the stop arm will depend on the maximum diameter of the rubber cap and there could also be a variation in the measurements of the TV clamps made by different manufacturers. Also the placement of the stop arm will determine the range of rotation which should be 90 degrees, but whatever locate the stop arm to clear the circumference of the rubber cap. When marking the position of the hole for the stop arm in the TV clamp take note from Fig. 2. When the constructor has decided the position of the hole run a $\frac{1}{4}$ " drill through both flats of the clamp. The $\frac{1}{4}$ " rod is then welded or brazed in position. It is essential that the rod protrudes from the top side of the TV clamp as shown in Fig. 2. Failure to do this will result in incorrect operation of the rotator.

Drill a $\frac{3}{16}$ " hole in each of the outer ends of the turning rods. A ring is fitted in each of the holes to carry a cable eye. When the turning mechanism is completed, a plating shop will cadmium plate or galvanise it for a moderate cost. This will give it all weather protection, otherwise corrosion will soon set in where the metal has been burnt during the welding process.

Assemble as follows: Ensure that the inside of the large tube is free of filings and other foreign matter. Check the in-



Horizontal position.

side and outside of the other tube for high spots, especially the bearing surface. Insert the tube into the larger one and if available smear a liberal coating of rubber lubricant over the outer ends of the bushes. Fit a rubber cap over each end of the tube. With the caps fitted movement of the tube will have stiffened up but should be free to rotate. Locate the inner tube so that an equal length protrudes from each end of the large tube and on the end furthestmost from the two stops on the barrel place one of the washers over the small tube. The aluminium clamp is then fitted tight up against the washer and tightened. Place the other washer over the other end of the tube. The turning mechanism is then put on the tube with the stop arm between the two stops where they are nearest to each other. Do not over tighten the nuts on the turning assembly. Details of final assembly can be seen in Fig. 1.

When installing rotator on antenna, note the centre of gravity, remove elements to this point and slide the rotator along the boom to the centre of gravity. The antenna is secured to the rotator with a self-tapping screw in each end of the rotator tube. The rotator is turned by means of a length of nylon cord that will reach from the antenna when extended to the maximum height down to near ground level. The nylon cord is taken around the cable eye. The best way to secure the cord on the cable eye is to slip a brass ferrule or a short length of brass tube over the cord, tie a knot in the short end, and pull the long end of the cord so that the ferrule is up tight to the cable eye, then crimp the ferrule in a vice. When the antenna is not being used in the vertical position turn it to the horizontal position. This will reduce strain in high winds on the rest of the antenna installation. Should any constructor experience any difficulty, contact the author. ■

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SUGAR COATED OSCAR

Gil Spencer VK2JK/ex W1ZCH
PO Box 300, Split Junction 2088

I'm sure there's a plot. It's been contrived by a small band of technically-oriented hams who want to keep OSCAR for their own devious purposes and leave the rest of us stagnating in a pool of confusion.

How else would you explain the mystery that still cloaks OSCAR-7 (Orbiting Satellite Carrying Amateur Radio — Version 7)? It's been up there for years now, faithfully spinning around the earth in a highly predictable fashion offering new horizons (literally) to amateurs. Yet we're still getting fed cumbersome information and confusing and incorrect data that makes it all seem just too hard.

Well, here in Split Junction, there's been a breakthrough! I've managed to cut through the nonsense. Without access to computers, az-el antennas, high-powered transmitters — as a matter of fact, with equipment not much different from yours, I'm working OSCAR-7!

My activity has been confined to Mode A (2 metres up and 10 metres down) so this article will stick with that. This removes a lot of the confusion. Mode B is 70cm up and 2m down and we'll forget Mode B. Here's my equipment line-up:

TRANSMIT:

CW on Kenwood TS-700A fed through 100 feet of RG-8/U to a 1/2 wavelength vertical ground plane. In round numbers, that's 3 dB of feed line attenuation, compensated by 3 dB of antenna gain. At most, my radiated power is 12 watts!

RECEIVE:

CW/SSB on Heathkit SB-102, a 6-year old obsolete ham band transceiver being fed RF by a 20-metre (sic) sloping dipole through 100 feet of RG-58/U.

With this primitive lash-up, I can hear the OSCAR beacon at 29.5 MHz practically all the time it is above my horizon. Not only that, I've heard VK2ZL, VK8ZC, ZL1ANT and others. With practically no trouble I can monitor my own CW signal being transmitted by OSCAR. By the time you read this article, I will have completed a QSO through OSCAR-7 Mode A. It's not hard. Wait 'til you see how I do when I organise a 10-metre dipole!

OSCAR-7 FUNDAMENTALS

Visualise OSCAR orbiting the earth in a fixed polar orbit travelling over the same terrain time after time, its speed and altitude fixed by the earth's gravity. That's what would happen if the earth was not itself revolving on its own axis. OK so far? The only thing wrong with that picture is that our earth of course, is revolving. Every QTH in Australia is continuously moving East. It's the earth's rotation, not OSCAR dancing around, that makes the satellite rise and set in different places.

ORBIT NUMBER

Now, let's get "Orbit Number" sorted out. Visualise OSCAR when it's directly above the equator travelling north. That's the beginning of a new orbit and the end of the old one. The orbit number increases by one. For example, old orbit number was 15000; new orbit number is 15001. Orbit 15001 will last one (1) hour and 55 minutes (OK, purists, 1 hour 54.944676 minutes ... see, that's the sort of thing they say to try and confuse us). In that hour and 55 minutes OSCAR will make a complete trip around the world and will again be over the equator travelling north. NOW GET THIS ... If the earth had only held still, OSCAR would cross the equator in the same place that it began. Fortunately for those of us who like sunrises, sunsets, etc., the earth is going about its business of revolving on its own axis. In the time it takes for OSCAR to complete its independent orbit, the earth has revolved toward the east. This means that OSCAR crosses the equator further WEST now than last time. Don't give up now. Spend about 3-4 minutes thinking about it. Visualise yourself aboard OSCAR looking down. Then visualise yourself further in space looking down on both OSCAR and earth (both, of course, satellites in their own way). Don't read on until you're comfortable with the concept.

Now the mathematicians know exactly how many degrees (there are 360 of these

needed to get around the equator) the earth will have revolved in 1 hour and 55 minutes. If you ask them they might tell you. They will quote 28.73617 degrees; we'll settle for 28.7. This is not all that obscure, really. Let's remember that the earth revolves 360 degrees in 1440 minutes (24 hours). If you work that out you'll see there's a connection.

Don't get confused by the fact that OSCAR really crosses the equator twice each orbit. It's the northbound crossing that counts. It's also the apparent degrees west equatorial movement that we need to remember.

So Table 1 gives two vital constants:

TABLE 1
OSCAR CONSTANTS

115 minutes = 1H 55M — time per orbit
28.7 degrees per orbit.

Try and memorise these Table 1 constants. They're all you need ultimately to remember.

MODE A DAYS

Starting in 1978, Mode A is available 1 day in 3. The other 2 days are Mode B days. The obscurists tend to mutter about this in a confusing fashion. It's not that hard, really. There can only be 3 types of months depending upon which date happens to have the first Mode A pass. They are:

"1" Month — Mode A on 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31.

"2" Month — Mode A on 2, 5, 8, 11, 14, 17, 20, 23, 26, 29.

"3" Month — Mode A on 3, 6, 9, 12, 15, 18, 21, 24, 27, 30.

In 1978 we have this Mode A line-up: Jan 3, Feb 2, Mar 1, Apr 3, May 3, Jun 2, Jul 2, Aug 1, Sep 3, Oct 3, Nov 2 and Dec 2. (Watch AR for any changes—Ed.)

OSCAR-7 ORBITAL REFERENCE DATA

There are a number of sources for OSCAR orbital data to help you know when to expect to hear OSCAR at your QTH. The Wireless Institute's journal, AR, is one. A more comprehensive annual calendar is available from W6PAJ. Send Skip \$5.00 (U.S.) and a self-addressed label for an air mail copy of the 1978 model.

The method usually adopted to publish orbital data is to give a daily reference orbit. The reference orbit generally selected is the first in each Greenwich day (this is the time the mode changes). The data given are, first the orbit number, then the date, followed by the time when the orbit begins, and finally the point where OSCAR crosses the equator moving north. The time is UTC (UTC = GMT = Zulu . . . it's all the same thing). The equatorial crossing is always given in degrees west of the Prime Meridian (Prime Meridian = 0 degrees = Greenwich meridian). The degrees can go as high as 359. This is actually an easier nomenclature than the one used on maps. There's no need to worry about whether it's east or west.

Here's a couple of things to think about. The time of the first Greenwich pass will always be between 0000 and 0154 UTC. Spend 30 seconds reflection right now and you'll understand why. The degrees west given always seem to be between 50 and 85 degrees. I haven't the faintest idea why. You'll have to ask someone else. (Because the orbit of the parent weather-satellite with which OSCAR was launched, was carefully engineered to be "sun-synchronous, i.e. to pass everywhere at about the same local times each day.—Ed.)

EVENING MODE A PASSES

If you're like me, you have to restrict yourself to the northbound passes because they happen in the evening. There are at least three of them every Mode A evening (see Days of the Year, earlier), wherever you are. For those of you who are home during the day, there are also 3-4 southbound passes you can hear, but this article does not address itself to them.

Before we go into how to figure out when OSCAR is hearable from your QTH, we need to have a bit more background.

A FEW MORE OSCAR-7 FUNDAMENTALS

The data given in Table 2 refers to metropolitan Sydney. The principles remain the same for anywhere in Australia but the figures need adjustment.

In Australia, as we listen to northbound OSCAR passes, we are concerned with the final minutes of the orbit. After all, OSCAR is on its way north to the equator where it will then pick up a new orbit number and continue around. In Sydney, fate places us on the earth in a position where OSCAR is just about setting on our northern horizon when it arrives over the equator. Of the 99 degree passes (more about this later) that are hearable from Sydney, we hear the final (115th) Minute from 30 of them, the 114th minute of 42 and the 110th minute of 69. In Sydney we never hear OSCAR when it's north of

TABLE 2

ORBIT USEFULNESS IN SYDNEY

(Based on 350 ft ASL as 33 50 00 S and 151 14 00 E)

Orbit Degrees West Xing	No. of Degrees	Remarks
0 through 48 degrees inclus.	49	OK for Southbound passes only
49 through 146 degrees inclus.	98	Never heard in Sydney
147 through 245 degrees inclus.	99	OK for Northbound passes only
246 through 308 degrees inclus.	63	Never heard in Sydney
309 through 359 degrees inclus.	51	OK for Southbound passes only
	360	

If you want to adjust this table for your location, find your QTH on a map and determine your longitude East of Greenwich. Subtract your longitude from 151 (Sydney). Add the difference to the degrees given in the table. For example, Perth is about 114 degrees east of Greenwich. 151 less 114 = 37. Adding 37 to the degrees given in the table tell us that useful northbound OSCAR passes in Perth would be those with crossings between about 184 and 282. Your distance from the equator also affects this table.

the equator. Listeners further north, in Brisbane or Darwin, for example, will hear OSCAR after it passes into the northern hemisphere, but not we Sydneysiders.

There's nobody close to sea level anywhere in the world who will hear OSCAR for more than 22 minutes during a hearable pass. If you're up in the mountains somewhere you might squeeze an extra minute out because your physical horizons are less restricted.

OK, then if the maximum window is 22 minutes and it's the final 22 minutes of an orbit, the thing to do is work backwards from the reference data rather than for-

5th and 6th orbits of each Greenwich day. They will be those orbits with a degrees west crossing between 147 and 245 degrees. On the odd occasions when there are four passes, they'll be the 3rd, 4th, 5th and 6th passes.

Once you have the reference data for the first Greenwich crossing of the day (from AR, perhaps), all you need are the factors for orbits +3, +4, +5 and +6 and a piece of scratch paper. Table 3 shows these factors; you'll have to supply the scratch paper.

These table 3 factors are simply an extension of the OSCAR constants given

TABLE 3

FACTORS USED TO ADJUST FIRST GREENWICH PREFERENCE ORBIT

Add to Orbit	Add to UTC Time	Add to Degrees West Crossing
+3	5H 45M	86.2
+4	7H 40M	114.9
+5	9H 35M	143.7
+6	11H 30M	172.4

wards. We should listen during the last half hour of life of particular orbits. In other words, let's figure out certain beginnings, subtract a half hour and listen to the end of the previous orbit. I find this is easier than working forwards. Maybe you'll agree.

HOW TO WORK IT OUT

After you get rid of the degree decimal points there are only 360 places where OSCAR can cross the equator. Only about 200 do you any good; the other 160 are useless. Of the 200 only 100 are useful for north-moving passes. See Table 2.

You don't really have to understand Table 2 to work out the passes that you will hear each evening. It's there to show that there is some logic to it all, and to assist hams in other parts of Australia.

Here's all you really need to know in Sydney. First of all, there are usually only three passes to be heard. Second, they are either the 3rd, 4th and 5th or the 4th,

in table 1, (the ones you memorised, remember?).

WHAT'S ON THE SCRATCH PAPER

This article was written on Sunday, 11th December, 1977. OSCAR-7 was in the 2 up, 10 down mode that day. The Sunday morning VK2 WIA broadcast gave these references for the day:

December 11th — Orbit No. 14052 — 1002 UTC — 177 Degrees West.

These references, unfortunately, are confusing. They quote Sydney acquisition time not equator crossing time, which makes it hard to figure subsequent orbits. Furthermore, the broadcast does not explain which figures are given. So the first problem is to know who to believe!

The AR references are usually correct and easier to work with. The December 11th reference from AR was:—

Orbit No. 14048 — 0048 UTC — 67.69 Degrees West.

First of all, when we look at the scratch pad, we discover that December 11th is one of those days when there are four usable orbits, instead of three. Orbits 14051 through orbits 14054, inclusive, all begin with a degrees west crossing between 147 and 245 degrees. When there are four, it means that the first and last are quite shallow. Perhaps Orbit No. 14051 will only peek over the Sydney eastern horizon for a minute or so. Anyway, the time to listen is in the last half hour just before Orbit No. 14052 begins. This means we'll subtract about 30 minutes from the commencement of Orbit No. 14052:

0828 UTC Orbit No. 14052 begins
—30M

0758 UTC (Which translates into 6.58 p.m. EA daylight savings time)

We won't really expect to hear it just then, but we'll be ready.

I'll cheat a bit now and consult a more accurate reference document (which I'll

tell you about later). This document tells us that Orbit No. 14051 (because its degrees west crossing was 154 degrees) is indeed a shallow one. At its closest approach to my antenna, it was over 3500 kilometres away and only slightly above the horizon (10 degrees elevation, for the boffins). Furthermore only six minutes of the orbit would be hearable, from 0810 until 0816 UTC. A real test for a 20 metre dipole. Maybe we should skip it.

The next two passes (No. 14052 and No. 14053) should be pretty good ones. They'll go higher above the horizon and stay up there longer. It's easy to figure out approximately when to listen from the scratch paper, simply the last hour of each orbit. That means:

Orbit No. 14052 — Listen between 0953 and 1023 UTC

Orbit No. 14053 — Listen between 1148 and 1218 UTC

It'll be too late to stay up for No. 14054 probably. It won't turn up until 65 minutes

(115-30) after it begins, at the earliest. 1218 UTC + 85 = 1353 UTC and that's almost 1.00 a.m. EA daylight time. Let's see how we're feeling at midnight!

Now, checking the more accurate reference (I'll tell you about it, I promise), here's what actually happens on those orbits:

ORBIT No. 14052

This orbit began with an equator crossing of 182 degrees. It became audible in Sydney at 1002 UTC8 (this is the time given in the VK2 WIA Broadcast) as it rose above the horizon in the Southeast. It climbed as it moved north until it reached an elevation of 55 degrees and a distance of only 1700 kilometres (remember OSCAR is only about 1500 kilometres straight up). Then OSCAR finally set almost due north at 1023 UTC . . . just as it reached the equator to begin its next orbit.

ORBIT No. 14053

OSCAR began this journey with an equator crossing of 211 degrees. It became audible here at 1155 UTC when it rose just a few degrees to the east of due south. On its trip northward it rose to 29 degrees above the horizon at a distance of just under 2400 kilometres. It disappeared in the northwest at 1215 UTC. Another good pass, with 20 minutes available.

ORBIT No. 14054

This 4th pass was, as expected, a really shallow one. With good equipment and good timing these are the passes that give the real OSCAR DX if you can make them work for you. At 1351 it rose in the southwest. Eight minutes later at 1359 UTC it set again, still in the southwest. It never got more than two degrees above my horizon and never came any closer than 4375 kilometres.

Maybe now you'll agree that it's simpler than the bufs hinted to work OSCAR with relatively primitive equipment. There's another technique that's even easier, if you don't like maths. Here's all there is to it! Pick a Mode A evening, tune your receiver to 29.5 MHz and leave it there all evening. If your receiver and antenna are any good at all you'll pick up the OSCAR beacon with its HI HI about every 75 seconds interspersed with numeric CW telemetry when it's in your range. You'll hear it, I promise you. It'll fade in and out as it spins slowly on its own axis but it'll be there. And you know how one thing leads to another. Listen between 29.5 and 29.4 for the hams. See you there!

If you want a really good reference document, send a letter to Bill Johnston, K5NR at 1808 Pomona Drive, Las Cruces, NM 88001, U.S.A. Tell Bill your longitude and latitude as closely as you can as well as the height of your antenna above sea level in feet. Send him these data along with a cheque for \$4.75 in Yankee dollars (get it from your bank). He'll air mail you back a computer printout based on your antenna. It's easy to use, very instructive, and good as long as OSCAR-7 is up there.

A quick look at the degrees column of our factors table shows us that the +3 orbit will work on December 11th. Here's why:

Reference degrees given	67.7
+3 degree factor	+86.2
Ref. Orbit +3 crossing	153.9 (rounds to 154 degrees)

154 degrees is between 147 and 245 degrees which are the useful ones in Sydney. We can start with Orbit No. 14051 (14048 + 3 = 14051).

So here is what is on the scratch paper for our first calculation:

Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +3	+5H45M	+86.2
	5H93M	
	—60M	
No. 15051	0633 UTC	153.89 Degrees West

After that first one, we'll now do the other sums and then we'll talk about what we've got. Here goes:

Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +4	+7H40M	+114.9
	7H88M	
	—60M	
No. 14052	0828 UTC	182.59 Degrees West

Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +5	+9H35M	+143.7
	9H83M	
	—60M	
No. 14053	1023 UTC	211.39 Degrees West

Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +6	+11H30M	+172.4
	11H78M	
	—60M	
No. 14054	1218 UTC	240.09 Degrees West

QRM ON THE BURGLAR ALARM CIRCUIT

E. Manifold VK3EM
267 Jasper Road, McKinnon 3204

Since building and installing the electronic burglar alarm in 1974, and as described in AR, March 1977, there have been several false alarms in the last few months, fortunately while we have been at home to attend to them.

As they have not been repetitive as to dates or time, it has left a nagging doubt, in case the house were left for long periods, that a false alarm would cause inconvenience to both neighbours and police. What to do?

The only appliance in the house that has ever triggered the alarm to my knowledge is an electric fan on the same circuit as the alarm power supply, when either switched off, or a change of speed was made, although the refrigerator, with a large motor, with frequent switching at all times of the day, has never triggered the alarm.

Tests made on the alarm circuit wiring, which was not earthed, with a CRO and VTVM/RF Probe, then switching the fan on/off, showed transient spikes of approximately 2.5 volts across the wiring resistance of 18 ohms, clearly enough to trigger the control transistor.

But since there were no domestic appliances, including the refrigerator, operating at the times of the false alarms, the voltage spikes must have originated on the power lines, or maybe a high power taxi unit. Again since it has only happened recently, could it be CB units immediately outside the house causing RF pick up to be rectified by the diodes in the control transistor base lead.

Retreating to the shack, tests were then made with the FT101B on 7, 14, 21, 27 and 28 MHz at several frequencies in each band, together with FM units on 52.5-146

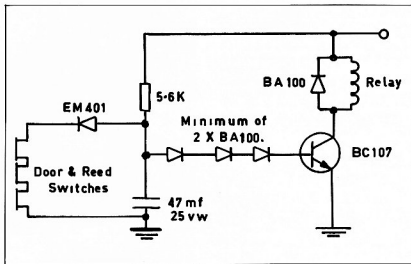


Figure 2

and 438 MHz without triggering the alarm circuit. RF interference was not proven.

Again what to do? Firstly a bypass condenser 47 uF was wired across the alarm circuit wiring at the control transistor. See Fig. 1.

This dropped the transient peak voltage to about 1.2 volts maximum but did not provide enough margin for safety, so two more silicon diodes were wired in series with the existing control transistor base leads, to raise the minimum conduction voltage of the transistor.

Subsequent tests have shown it now takes 4 volts AC across the wiring circuit of 18 ohms to trigger the alarm control transistor.

These mods were then carried out on the second unit, but where the first unit has not given any more trouble, the false alarms have continued at the business premises, due no doubt to the presence and switching of two 35 h.p. 3-phase motors and auxiliary cooling tower and pump motors for the refrigeration plant.

The base diodes to the control transistor were eventually increased to 8 diodes over a period, without avail.

It was originally considered in the first unit to install a series diode in the alarm circuit wiring at the transistor input, but thought that at the cut-off point during the interfering pulse the base voltage could rise sufficiently to trigger the alarm.

Since the 8 diodes in series with the transistor base were not effective in the second unit, a 400 PIV power diode was installed in the alarm circuit wiring as a trial to determine if the interfering pulses were long enough to cut off the series diode, and allow the 47 mF condenser to charge to the point of triggering the control transistor. See Fig. 2.

To date this has not occurred, despite the many temperature controlled switching cycles of the refrigeration plant motors during each night's operation.

It now appears that the time constant of the 5.6K resistor and the 47 mF condenser are long enough to offset the duration of any pulsed interference induced into the alarm circuit wiring, but the number of diodes in the base circuit of the transistor determine the voltage to which the 47 mF condenser can charge before triggering takes place.

While the random nature of the interference has taken a long time to establish and track down the cause of the false alarms in these two installations the remedy could be applicable to other cases.

Since one genuine and two false alarms gave the police a high speed dash of 8 miles each way in the early a.m., and a few alarms investigated and found false, we feel more confident that any future calls will be "for real when the whistle blows next time". ■

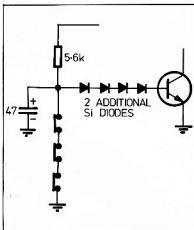


Fig. 1: Modified Control Circuit

DX FROM VITI LEVU — FIJI ISLANDS

Bruce Bathols VK3UV

On a recent cruise around the Fiji Islands, I had the pleasure of meeting Upali Ranasinghe 3D2UP, from Suva.

Suva is the capital city of the Fijian group which consists of approximately 300 islands. Only 80 or so are inhabited (mostly by natives and Indians), and the main island, Viti Levu, is where the action is.

There are 23 licensed amateurs in Fiji, but only eight are active at the present time, and all are located on Viti Levu.

Upali has been in Fiji for 18 months and is an engineer with the Suva City Council.

He originally comes from Sri Lanka and holds the call 4S7UR. Upali hopes to return to his Sri Lankan home in about two years.

I first worked Upali in February 1978 and he is usually active most evenings between 0600Z-1200Z on 20 Mx between 14.200 and 14.250 MHz.

His excellent QTH is situated about 400 ft. a.s.l. with a south-easterly aspect and overlooks Suva harbour.

At the moment he is using an FT101E and G5RV. However, the day we had our eyeball QSO, he had just finished building a 2 element 20 Mx spider quad at 30 ft. which was yet to be tested.



Upali and son Darshaka.

While I was there Upali fired the FT101E into the new quad and, using his Armstrong rotator, turned the quad toward VK.

It appeared to be working perfectly, 1.3 to 1 SWR over the entire band, with a good F/B ratio.

We worked VK2, VK5 mobile and ZL, all signals received were 20 dB over S9.

Upali hadn't possessed a beam previously and he was delighted by its performance.

I asked him about the performance of his G5RV and the report he gave was amazing.

Because of the tropical latitude of Fiji and the excellent QTH, Upali has been able to obtain global communication almost at will with his G5RV.

There is a local Radio Club on the island, but it is inactive momentarily.

The British Government has given the Fiji Institute of Technology (FIT) complete equipment to establish an amateur station, and it is hoped that the Radio Club will once again become active with the acquisition of this gear.

Strange as it may seem, with the 100s of duty free establishments, there is no commercial amateur radio equipment available in Fiji — probably due to the lack of demand.

There is the usual assortment of CB hand held transceivers in the duty free shops, but I did not see any of the units displayed which would be suitable for installation in a vehicle (only a matter of time, I guess!).

Apparently CB is legalised in Fiji on a restricted basis, but I was unable to find out further details. I did not see any evidence of CB proliferation like it has occurred in VK.

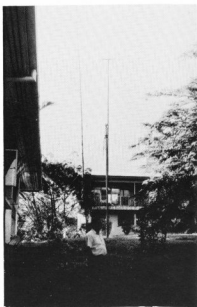
There are no TV stations in Fiji, and was therefore intrigued by some large TV arrays situated on houses on the hilltops.

Yes, CH9 TV Brisbane, Melbourne and New Zealand is available to those who have a high enough location for the ducting, etc., that occurs — most times with noise free reception all year round.

Upali and his charming wife, Shreeni, have four children — one boy and three girls.

The girls don't appear to be interested in amateur radio, but Upali's 15-year-old son Darshaka is showing a keen interest and he hopes to go the whole way and study for his licence very soon.

Upali requested me to inform other amateurs via AR that he would be very happy to have an eyeball QSO as you pass through the area, after arranging preliminaries on 20 Mx.



Upali with his new Spider Quad.

AUSTRALIAN DRAFT PROPOSALS FOR WARC RELEASED

On the 28th May, the Minister for Post and Telecommunications released the draft Australian proposals for the World Administrative Radio Conference in 1979. These proposals do not necessarily represent Australia's final position, but have been released to enable community discussion prior to the adoption of a final position.

A number of proposals from the Amateur Service have not been included, for example, a new band at 160 to 190 kHz, but other proposals have been adopted in this draft. Of particular interest to the amateur Service is the Australian proposal for a new band at 10.1 to 10.2 MHz, a new band that is also proposed in the eighth Notice of Enquiry released by the Federal Communications Commission (USA) on the 5th May, 1978. New bands (each 200 kHz wide) are also proposed at 18.1 and 24.150 MHz. The specific proposals of the Australian draft affecting the Amateur Service are as follows:—

1800-1900 kHz

Amateur Secondary shared with radio navigation and radio location. This is an increase of 40 kHz for actual Australian allocation, but a Regional reduction of 100 kHz.

3500-3900 kHz

Amateur, shared with Fixed and Mobile is proposed for Region 3. At this stage, Committee 8 considers the present arrangement in Australia preferable, i.e. Footnote RR206 that in Australia, the Band 3500-3700 kHz is allocated to the Amateur Service; the Band 3700-3900 kHz is allocated to the Fixed and Mobile services. It is also proposed that 3950-4000 kHz in all Regions be allocated to the Broadcasting service.

6900-7000 kHz

Amateur and Fixed shared all Regions.

7000-7100 kHz

Amateur, Amateur Satellite, exclusive all Regions.

7100-7500 kHz

Broadcasting exclusive all Regions.

10100-10200 kHz

Amateur exclusive. A new band.

14000-14250 kHz

Amateur, Amateur Satellite, exclusive. No change.

14250-14350 kHz

Amateur.

18100-18300 kHz

Amateur, Amateur Satellite, exclusive. A new band.

21000-21450 kHz

Amateur, Amateur Satellite, exclusive.

24150-24350 kHz

Amateur, Amateur Satellite, exclusive. A new band.

28.000-29.700 MHz

Amateur, Amateur Satellite, exclusive. No change. Footnote 226 — that in Region 2, Australia and New Zealand, the Amateur Service may operate between the frequencies of 28960 and 27230 kHz.

47-68 MHz

Fixed, Mobile and Broadcasting in Region 3. In Region 1 Broadcasting. In Region 2 Amateur 50-54 MHz. Footnote 246A — In Australia, the band 52-54 MHz is allocated to the Amateur Service on a secondary basis.

144-146 MHz

Amateur, Amateur Satellite, all Regions.

146-148 MHz

Amateur, Regions 2 and 3.

420-450 MHz

Radio location shared Amateur secondary. No change. Footnote 320A — Maintained in the band 435-438 MHz. The Amateur Satellite Service may be authorised on condition that no harmful interferences shall be caused to other services, operations in accordance with the Table. Administrations authorising such use shall ensure that any harmful interference caused by emissions from any Amateur Satellite is immediately eliminated in accordance with the provisions of No. 1567A.

1215-1240 MHz

Radio navigation Satellite. Radio location shared Amateur secondary.

1240-1300 MHz

Radio location shared Amateur secondary.

2300-2310 MHz

Amateur, Amateur Satellite exclusive. A new exclusive band.

2310-2450 MHz

Radio location shared Amateur, Fixed and Mobile secondary.

3300-3400 MHz

Radio location shared Amateur secondary.

3400-3410 MHz

Fixed Satellite, radio location shared Amateur, Amateur Satellite secondary. A new Amateur Satellite band.

3410-3500 MHz

Fixed Satellite, radio location shared Amateur secondary.

5650-5670 MHz

Radio location shared Amateur, Amateur Satellite secondary. A new Amateur Satellite band.

5670-5725 MHz

Radio location shared Amateur, Space Research (Deep Space) secondary.

5725-5850 MHz

Radio location shared Amateur secondary.

10000-10475 MHz

Radio location shared Amateur secondary.

10475-10500 MHz

Radio location shared Amateur, Amateur Satellite secondary. A new Amateur Satellite band.

24-24.05 GHz

Amateur, Amateur Satellite, exclusive.

24.05-24.25 GHz

Radio location shared, Amateur secondary.

49.5-50 GHz

Fixed, Mobile, Amateur, Amateur Satellite, shared. A new allocation.

71-72 GHz

Earth exploration Satellite. Space Research. Radio location shared, Amateur, Amateur Satellite secondary. New allocation.

72-76 GHz

Radio location shared Amateur, Amateur Satellite secondary. New allocation.

165-170 GHz

Radio location shared Amateur, Amateur Satellite, secondary. New allocation.

240-250 GHz

Fixed radio location. Mobile shared, Amateur, Amateur Satellite, secondary. On the shared bands above 3400 MHz, a new Footnote 376A is proposed that no harmful interference shall be caused by the Amateur Satellite Service to other Services. Administration shall ensure that harmful interference caused by emission from an Amateur Satellite is immediately eliminated in accordance with RR1567A.

THE BACKGROUND TO THE AUSTRALIAN DRAFT PROPOSALS

David A. Wardlaw, VK3ADW,
Federal President,
Wireless Institute of Australia.

Michael J. Owen VK3KI,
IARU Liaison Officer.

When a World Administrative Radio Conference was first proposed, the Institute recognised that a general review of

Article 5 (the frequency table) was of vital importance to the Amateur Service. The Institute immediately made representations to the Australian Post Office, the Department then responsible for frequency management, to ensure the Amateur Service was adequately represented in the preparation of the Australian position.

At that time the WARC was only a general proposal and no date had been set. In fact, some were questioning whether such a conference was practicable. Despite these reservations, the Secretary of the Department gave assurance that the Australian Amateurs would be consulted fully through the WIA.

Early in 1976 the Institute received an invitation to send its representative to the initial meeting of the Australian Preparatory Group (APG). This group was to accept responsibility for the Australian preparation for WARC. By this time a significant change had occurred in frequency management as the Australian Postal Commission and the Australian Telecommunications Commission had become independent statutory commissions. Whereas in the past the old Postmaster-General's Department had been both a frequency user and a frequency manager, the new Postal and

Telecommunications Department had been formed and was responsible for frequency management without being a frequency user itself. The first meeting of the APG was chaired by the Assistant Secretary, Postal and Telecommunications Department, and included representatives of all the services that were involved in the use of the radio frequency spectrum. Approximately 25 people, including representatives of the Postal and Telecommunications Department, were present at this initial meeting. At this meeting seven committees representing the services using the radio frequency spectrum were established. It was decided that the chairman of each of these committees would be a continuing member of the APG. In addition, a number of others were invited to join the APG to ensure that all frequency users were properly represented.

David Wardlaw, President of the Wireless Institute of Australia, represented the Amateur Service at this meeting and he was appointed Chairman of Committee 2 which was given the responsibility to report on the Amateur and Amateur Satellite Service. Each committee was requested to prepare a paper specifying the requirements of each Service through the year 2000.

Committee 2, the Amateur Service and Amateur Satellite Service, based its scenario on the position adopted by the International Amateur Radio Union. It relied heavily on the material prepared by the IARU President's Advisory Committee but modified the arguments to suit the Australian situation. The Institute believes that the role of the IARU to be essential to the co-ordination of the presentation of the Amateur Service case globally.

A further committee was formed to assess the conflicting requirements of each Service and to produce a provisional proposal which was the subject of further discussions by the APG.

From these studies a first Draft of the Australian proposals was prepared and each committee was asked to study this draft. The second Draft was prepared on the basis of the additional comments made by the committees in respect of the first Draft.

The comments included in the draft proposal stress the desirability of the allocation of a family of frequency bands to allow the propagation characteristics of the HF band to be adequately exploited.

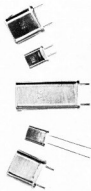
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TV CHANNEL 5A — (137-144 MHz)

Suggestions had been noted that TV Channel 5A should be used for Ethnic broadcasting. Inevitably this would result in the use of this channel in capital cities.

As this is of great concern to all amateurs, a letter, copied hereunder, was written to the Minister for Post and Telecommunications.

Copies of this letter had been sent at once to each Divisional Federal Councillor with the recommendation that members be encouraged urgently to protest individually or as groups to Parliamentarians.

This is the letter:—

The Wireless Institute of Australia,
Federal Executive,

P.O. Box 150,
Toorak, Vic. 3142
26th May, 1978

The Hon. A. A. Staley,
Minister for Post and Telecommunications,
Parliament House,
Canberra, A.C.T. 2601.

Dear Sir,

The Wireless Institute of Australia representing radio amateurs in this country desires to record its great concern at the continuing, let alone increased, use of Channel 5A for television transmissions. An increased use is, at least according to a report in the Melbourne "Age", suggested for ethnic broadcasting stations.

May we respectfully remind you that this television channel is unique to Australia and not in accord with the international agreements covering the use of radio frequency (that is, Article 5 of the Radio Regulations of the International Telecommunications Union). Why should we be concerned with the non-conformity of this country to that international agreement.

The allocation of radio frequency by the ITU has had regard to the "neighbourhood" in which a particular use is placed. The Amateur Service involves the use of radio frequency by licensed radio amateurs throughout this country. In fact, one person in every 1,500 in Australia is a licensed amateur. Channel 5A is 137 to 144 MHz. The Amateur Service is allocated in Australia and throughout Region 3 the band is 144 to 148 MHz.

It is inevitable that the use of Channel 5A for television purposes results in interference from amateur stations operating in one of their most used bands to receivers tuned to Channel 5A. Likewise, the television transmitters using Channel 5A cause interference to amateurs. If the suggestion reported in the "Age" is adopted, then Channel 5A use will occur in capital cities. Already the allocation of Channel O, particularly in Melbourne and Brisbane, precludes or severely curtails the use by

amateurs of the 6 metre amateur band allocated to the Amateur Service because of the same interference problems that will arise with the use of Channel 5A. Allocation of Channel 5A in areas where Channel O already operates will detrimentally affect the amateur use of the two most used amateur VHF bands. In fact, these two bands are the lowest bands allowed to limited licensees (that is, amateur licensees without a Morse code qualification).

To take the "neighbourhood" analogy further, really an analogy based on town planning principles, one does not put a glue factory or tanning works in a residential area. In short, it is a principle of town planning that the adjacent use of land for different purposes should be compatible. It is a principle of frequency management that the adjacent use of radio frequency must be compatible.

That is recognised by the ITU, but has been disregarded by the Australian regulatory authorities.

In fact, the Institute has understood (even if it has not accepted) the pressures that led to the allocation of Channel 5A. Those pressures no longer exist; it is fanciful to suggest that the introduction of UHF channels would today impose any real burden on our community. The Minister's own experience should make him completely aware of the general distribution

throughout the community of television receivers capable of receiving UHF channels.

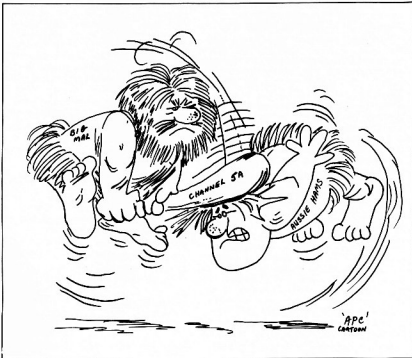
The Institute is, of course, concerned that radio amateurs can live in their community without conflict with their neighbours or without restriction on the legitimate use of bands allocated to them.

We would, however, be surprised if other frequency users (whose adjacent use is compatible with our use) did not share our concern. The Minister's advisers are, no doubt, fully aware of the use of the band 137 to 138 MHz by meteorological satellites, for space research, and space operations (with Channel 5A not an adjacent use, but a use in common).

May we respectfully suggest that the Minister should enquire of his advisers how many satellites have been launched using these frequencies in the past five years?

Likewise, the Minister is no doubt aware of the International Telecommunications World Administrative Conference to be held in 1979. This Conference raises the possibility of a majority of nations agreeing to a use of that part of the radio spectrum covered by Channel 5A that is totally incompatible with television broadcasting.

This matter is drawn to your attention because of the extraordinary concern expressed by so many amateurs and because



we are firmly convinced that Australia has today, in realistic terms, the option of introducing UHF television and thus preserving harmony with the rest of the world and avoid a conflict arising from incompatible use, a conflict that we see as being totally unnecessary.

It is no longer necessary to site the tanning works in a residential area. The introduction of UHF channels provides a solution. To do otherwise is only to enlarge the problem that is already real at a time when the appropriate course in technical and community terms seems to us

to be clear.

I am instructed to seek your urgent assurance that allocation of Channel 5A for further television broadcasting services is not contemplated.

Yours sincerely,

D. A. Wardlaw, President.

SIMPLIFIED INTRUDER WATCHING

Please read the following, it applies to all amateur bands and all intruders (including "pirates"), in conjunction with the insert in this issue.

At the Federal Convention in Melbourne during Anzac week-end I was given an excellent hearing on intruder matters. I stressed the fact that, in the WIA, members are very loathe to act as I.W. Observers, and one suggestion was put forward that I am following up. It amounts to this — instead of members taking on "official observer" status, they be more free and not obligated by that status. The idea is that members keep alongside them on their operating desk a copy of the insert form, which is designated "Observers' Log Sheet".

In listening around the bands, or in normal operating, when an intruder is heard an appropriate entry would be made on the form, and at the end of each month the sheet/s would be forwarded to your Divisional Co-ordinator (as listed below).

From your standpoint this would take the onus of being "official" off your shoulders, and I urge all members to start now to stimulate more activity in intruder watching to make it the success that it should be.

The Intruder Watch Service works in this way. Say, for instance, that on some occasions your favourite net or frequency is subject to harmful interference from a non-amateur transmission, and you want to do something about it. You note the occurrence on the Observers' log sheet, making as many observations as you can on different days, then at the end of the month you forward the sheet to your Co-ordinator. Many reports will bring results, but not just an isolated report, so get all the participants on the net also to send in their findings. Thus, after a while, you'll be used to doing this, and many reports will be received, and some action taken. Identifications are essential to get action, but what you hear without identification can be most useful to tie in with somebody else's reports. When compared these often build up a dossier on the station concerned.

Observers' Log Sheets are available from your Co-ordinator, or you may prefer to rule your own. By being alert to in-

truders when operating, I am sure will make your listening much more interesting and, Short Wave Listeners, so long as their equipment is accurate, can participate. Be enthusiastic, note all infringements that you hear, and send your sheets in monthly. They'll be much appreciated, and at WARC 79 will be used to condemn those countries who allow stations to intrude into our Amateur bands. You'll be doing a great service to Amateur Radio as a whole, and it will pay dividends next year.

Your Co-ordinator is as hereunder:—
VK1AOP — Ted Pearce, 45 Carnegie Cres., Narrabundah 2604.
VK2AFG — Les Weldon, 11 Raymond Ave., Northmead 2152.
VK3XB — Ivor Stafford, 16 Byron St., Box Hill South 3128.
VK4KX — Murray McGregor, 6 Murray St., Red Hill 4059.
VK5LG — Leith Cotton, 64 Weroona Ave., Parkholme 5043.
VK6WT — David Couch, 9 The Grove, Wembley 6014.
VK7MX — Max Ives, P.O. Box 12, Devonport 7310.
VK8HA — Henry Andersson, P.O. Box 1418, Darwin 5794.
AIF Chandler VK3LC, I.W. Co-ordinator.

PLEASE KEEP LOG SHEETS BESIDE YOU AT ALL TIMES.

TECHNICAL CORRESPONDENCE

22 May, 1978

The Editor,

Dear Sir,

In reference to an article in your publication of April 1978, page 18, "A scanner for the 2m Kyokuto", by Martins Willems VK4ZIL—I have constructed this item and found two errors in the circuit diagram. The 47 uF capacitor at pins 10 and 11, the IC A should be approximately 0.25 to 0.33 uF and the 0.025 uF at the pins of IC B should be 47 uF.

These values are subject to user's choice, depending on how fast the scanning is to take place in the first instance and how long the delay is after detecting a busy channel in the case of IC B.

In the last paragraph, mention is made of one "round trip" taking 14 seconds, which is much too fast. With the 0.22 uF it takes about 40 seconds. This sounds slow, but not when one watches the 10 kHz LED flashing along. It actually is so fast that after the stopping of the scanner takes place it is on the next step from the "busy" channel (as mentioned by the author in the next-to-last paragraph). Any faster a scan rate seems to be too fast.

I hope this note will save others from the difficulty of sorting it out the hard way as I did; otherwise it is a good project and I use the device quite often.

Sincerely,

Brian Field VK2MK,
4 Kappyong Street, Belrose 2086.

An errata has been received from the author concerning one of the capacitor values and this was published in June issue.—Ed.

Photographs for AR



DON'T KEEP THEM
TO YOURSELF



Send them in — NOW

NOVICE NOTES

TVI

For your convenience and guideline, some of the more useful steps to be taken in elimination of interference are listed below:

- (1) Completely shield your transmitter.
- (2) Install a well-shielded low-pass filter.
- (3) Reduce transfer of harmonics between stages by means such as loosely coupled grounded link coupling between stages and electrostatic shielding in RF coupling transfers.
- (4) Install a high "Q" series inserted parallel tuned harmonic trap in the plate circuit of each stage, as well as grounded absorption trap circuits tuned to the interfering harmonic and closely coupled to the far end of the plate tank circuit of all transmitter circuits. These trap circuits have been found to be particularly effective on the reduction of harmonic radiation.
- (5) Make sure there is sufficient capacity in the final stage plate circuit to provide a high circuit "Q".
- (6) Operate the final stage of your transmitter with the lowest grid bias consistent with reasonable efficiency, and do not overdrive it.
- (7) Install stubs at output of the transmitter cut to appropriate length for troublesome harmonics.
- (8) Filter and shield all exposed power leads between the transmitter and the transmitter power supply and between the power supply and the AC line.
- (9) Avoid using a directly excited voltage feed antenna.
- (10) Install a current feed single band antenna that will not readily radiate harmonics of the operating frequency.
- (11) If necessary, replace your antenna feeder with a coaxial cable to reduce coupling between the antenna feeder and conductors in the vicinity, particularly the power wires inside the building in which the transmitter is located. (Other wires in addition to the transmitting antenna can radiate, especially nearby wires or conductors of critical length. This can in effect cause a rise in radiation of harmonics.)
- (12) Reduce standing waves to a minimum on your antenna feeder line.
- (13) Try re-orienting your antenna with respect to the television receiver to see if a null in your radiated pattern will reduce or eliminate the interference, or try to locate your antenna further from the TV antenna.

—From World Radio News March 1978.

REMEMBER!!

It cannot be stressed too often that much worry and frustration over projects which

don't work can be avoided by paying attention to those points which should be simple and obvious but are often overlooked. Are the transistors, for instance, inserted the right way around? Have you got badly soldered joints? Normal eyesight is just not good enough to find dry joints and faults in circuit boards, and it is essential to get hold of a watchmaker's eyeglass and use it whenever checking for these faults. Then there are dry joints which are badly soldered or perhaps not soldered at all, and the other extreme where blobs of solder are bridging a couple of connections. This can very easily happen with dual in-line integrated circuits where the pin spacing is only 1/10 of an inch apart. Open circuit or wrong value resistors and capacitors can be another source of trouble as can electrolytic capacitors which have a high leakage. Make a list of all these possibilities starting with badly soldered joints and work through the list systematically and the chances are about twenty to one that you will find the trouble is due to one of these faults — simple and obvious after you find it, but very frustrating and puzzling until you do!

— From Zero Beat April 1977.

TOWER INSTALLATION HINTS

Evan Rolek K9SQG

Here are some hints for tower installation which might be of interest.

1. Mount tower away from the house, if possible, to avoid lightning flash-over.
2. Use connectors for all coax lines and rotor control where lines leave the tower. Disconnect when not in use or when storms are in the area.
3. Install ground rods in bottom of hole for base before concrete is poured. This will allow a deeper, more effective ground than a rod next to the concrete base.
4. Run ground radials away from the tower in case one decides to shunt feed the tower on 75 or 160 metres at a later date.
5. Contact a reputable ready-mix concrete firm to discuss the load rating and slump for your particular application.
6. Build a frame so that the base will be sloping to enable rain and snow runoff.
7. Seal tower joints on the outside with silicon sealer.
8. Crumble window screen and insert in bottom section of tower to prevent spiders from entering the tower and causing frost build-up.
9. Use a thrust bearing at the top of the tower.

10. Mount rotor as low as possible in the tower. This will enable easy maintenance and allow excess mast to act as a torsion bar, rather than the tower.

11. Use at least some cable clamps for the coax and not just electrical tape.

12. Seal all coax connectors with silicon seal where they enter the antenna.

13. If the antenna must be over a patio, use an owl decoy from a sporting goods shop atop the antenna to scare away birds which are not toilet trained.

14. Seal or fill the mount which is mounted in concrete in order to prevent "freezing expansion".

15. Even if the tower is aluminium, use several coats of spray paint on all steel hardware such as nuts and bolts.

16. For "self-supporting towers" have some storm guy wires handy to attach to the house or anchors in case severe storms are heading your way.

17. Devise a maintenance bracket of some sort to prevent antenna rotation in case the rotor is removed for maintenance.

—From World Radio News March 1978.

QSP

TOWNSVILLE BOOKS DONATION

To help foster interest in amateur radio, the Townsville Amateur Radio Club recently decided to make an annual donation of relevant books to the two municipal libraries in Townsville. At the same time, the libraries agreed to subscribe to AR. The photo shows the Club President, Peter Ranton VK4PV, presenting the list of these books to the Librarian, Mrs. Joycelyn Brent.

ONE HUNDRED AND SIXTY METRE NET

Peter Brown, VK4PJ, and John Aarseth VK4QA, have for the last few months attempted to create interest in the top band in S.E. Qld. by regularly activating one point eight two four on single side band.

The scheduled times do vary, usually from 09.45 GMT to 10.00 GMT each Sunday. Although the band at times seems to be very noisy, it is very surprising what can come through. Some weeks ago, VK3VS/P, Blue Mountains, came in with 5 and 9 signals.

Static noise nine plus does not stop Ipswich coming in at Redcliffe with good signals.

Roy VK4ZQ managed to work on SSB into the U.S. West Coast in November last year. Others worked into the Solomons and Kermadec.

With the winter season coming up in a few months, the southern States will be romping in again, 5 and 9 plus into VK5 and so on.

Why don't you get ready for top band and join the Queensland net on Sundays, if only to find out if you have a strong second harmonic radiation.

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TH3-MK3 10-15-20M senior 3 el. Yagi 14' boom
TH3-JR 10-15-20M junior 3 el. Yagi 12' boom
204-BA 20M monoband 4 el. Tiger Yagi 26' boom
HY-QUAD 10-15-20M full size Cubical Quad
BN-86 Balun
Also 2M Yagis will be available.

Large quantities available July/August direct from factory. Price will be competitive and will depend upon import duty requirements. Parts for damaged HY-GAIN antenna available on indent order basis until stocks of parts available.

AMATEUR EQUIPMENT:

KENWOOD TS-520S 10-160M SSB/CW transceiver 240V AC	POA
KENWOOD TS-820S 10-160M SSB/CW transceiver w/Digital readout	\$1,000
KENWOOD DG-5 Digital display for TS-520S	\$175
KENWOOD TV-506 6M transverter	\$175
KENWOOD AT-200 Antenna matchbox	\$165
YAESU MUSEN FT-101E 10-160M AC/DC transceiver w/Speech processor	POA
YAESU MUSEN FT-901D Deluxe AC/DC 10-160M Digital transceiver	POA
YAESU MUSEN FT-7 Mobile 10-80M 20W 12V DC transceiver	POA
YAESU MUSEN FL-2100B 10-80M 1200W Linear Amplifier	POA
YAESU MUSEN FRG-7 .5-30MHz General coverage receiver	POA
YAESU MUSEN SP-101B Extension speaker	\$30
ATLAS 210X 10-80M Mobile transceiver c/w HD cable	\$825
FDK MULTI-800D 800 channel (5KHz) 2M FM transceiver 1-25W adjustable output	\$325
slow/med/fast up/down tuning free split VFOs Memory	\$40
FDK DD-800 Bright Remote display for the 800D for mobile use	
FDK MULTI QUARTZ-16 24 ch. 10W 12V DC 2M transceiver w/crystals for	
repeaters 1-8 and channels 40 & 50	Still only \$175
ICOM IC-202 2M SSB portable transceiver — a few only —	Still only \$175
KEN KR-400 Azimuth antenna rotator w/28V AC control/indicator box	\$100
KEN KR-500 Elevation antenna rotator w/28W AC control/indicator box	\$125

COAX CONNECTORS:

PL-259 suit RG-8U & RG-58U, Solderless PL-259 suit RG-8U & RG-58U, in-line splices	
suit RG-8U & RG-58U	
SO-239 with 2 hole or single hole w/lock nut mounting	Each .75*
Double male connectors	Each .75*
3- & 4-pin microphone sockets, 3- & 4-pin in-line microphone plugs	.85*
3 circuit microphone jacks	Each .85*
Car cigarette lighter plugs	.85*
26" coloured jumper leads w/crocodile clips — bundle of 5 —	\$3.00

ACCESSORIES:

FERRIS SWR/Field Strength meters	\$15.00
SWR-50A Twin Meter 3.5-150 MHz 1 KW SWR/Power meter	\$20.00
BUMPER MOUNTS — fit any bumper — with 3/8" 24 thread antenna mount	\$7.00
GUTTER MOUNTS — with 3/8" 24 thread antenna mount	\$4.50
5 metre lengths RG-58U w/PL-259 connector one end	\$3.00
3' lengths RG-58U w/PL-259 connector each end	\$2.50
M-ring body mount	\$3.00
GLP right angle connector RG-58U to SO-239 w/lock nut & weatherproof cap	\$3.50
MLS right angle connector RG-58U to PL-259	.90*

TERMS strictly CASH WITH ORDER. PRICES subject to change without prior notice.

FULL RISK INSURANCE free. FREIGHT — Air, Rail, Road, or Postage is extra — allow for freight charges where applicable when sending order — surplus will be refunded when goods despatched. All orders cleared on date of receipt of order.

Arie Bles (VK2AVA) — Proprietor
Roy Lopez (VK2BRL) — Manager

carrier sound system.

1. Adjust the sound oscillator to 5.5 MHz.
2. Adjust the series resonant trap for minimum frame buzz. Adjust the output

potentiometer VR7 for a suitable level. If this potentiometer is set too high degradation of the picture quality will result.

3. The input and bias potentiometers VR5 and VR6 should be adjusted for correct gain and best deviation linearity.

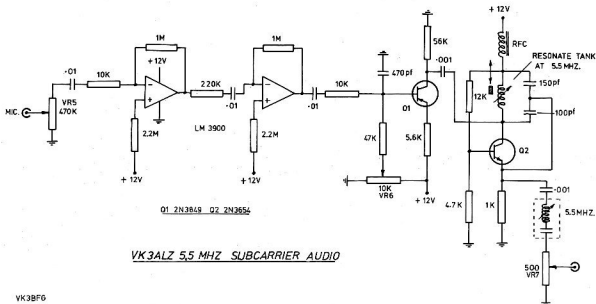


FIGURE 2

AMATEUR RADIO ON NATIONAL TV

AMATEUR RADIO ON NATIONAL TV

During May and June, the 7 National Network showed a half hour segment depicting amateur radio in their program "This week has seven days". The WIA and amateur radio received much needed publicity, and many enquiries were received as a result.

Excerpts from an ARRL film were shown and several Victorian amateurs were interviewed by David Johnston and Deane Blackman VK3TX.

PHOTOGRAPHS

- No. 1. Deane Blackman VK3TX (l.) and David Johnston discuss homebrew equipment with Paul Taylor VK3BLV.
- No. 2. Bob Arnold VK3ZBB (centre) explains Amateur Satellites.
- No. 3. Doug McArthur VK3UM (r.) gave an SSTV demonstration.
- No. 4. Ron Fisher VK3QM showed viewers a TS820 and gave details of Amateur Radio and the WIA in general.

Photos "off air" by VK3UV.



Photo No. 1



Photo No. 2



Photo No. 3



Photo No. 4

DICK SMITH for AMATEURS

Dick has an enormous range of amateur equipment, and it's growing daily! Call in today and have a look around. You're under no obligation! Dick Smith Electronics — the professional amateur suppliers.

New FULLY LEGAL ANTENNA ROTATOR



- * Massive disc brake
- * Fits up to 2" o.d. mast
- * Rugged construction
- * Completely waterproof

Handles most beams with ease. Supplied with fully approved power supply (Cat. M-9560) and large, easy-to-read control box.

COMPLETE UNIT — Rotator, control unit and approved power supply:

\$148⁰⁰

Rotator & control box without power supply ... Cat D-5000 ... \$122.00
Additional mast clamps of required ... Cat D-5001 ... \$12.50
WE BELIEVE THIS IS THE ONLY APPROVED ROTATOR IN ITS CLASS IN AUSTRALIA!

INCREDIBLE BARGAIN!

4 core rotator cable — only 35c per metre. Sure, you'll need two lengths — but you get the equivalent of an 8-core cable. Parallel wires to the motor for minimum voltage drop — or use spare wires to control antenna changeover relays!

Cat W-2040 ... 35c / metre

WOULD YOU BUY A TV SET WITHOUT A WARRANTY? Of course not! Then why would you buy a complex transceiver — probably costing more than a TV set — without a warranty? Just to save a few dollars? Remember, one service call could easily wipe out any 'savings' you might have made ...

EXCLUSIVE TO DICK!

FABULOUS NEW HEAVY DUTY CO-AX RELAY

- * waterproof
- * latest micro-strip design
- * 1.5 — 500MHz
- * 2500W PEP to 60MHz
- * 1500W PEP to 500MHz
- * 9 — 18V control voltage
- * 52 ohm impedance
- * insertion loss less than 0.1dB
- * insertion noise 'too low to measure'



\$49⁵⁰

Cat D-5210

Save the high cost of an extra length of co-ax. Make instant antenna comparisons. Instant horizontal to vertical change-over. A truly professional relay for the serious amateur.

DON'T SETTLE FOR INFERIOR UNITS!



\$169⁵⁰

MULTI QUARTZ 16 — 2m FM TRANSCEIVER Cat D-3889

144 to 148MHz, with 23 channels plus two priority, provision for VFO. Price includes one channel. Was originally \$228 — save

Some kits still available for only \$4.75 per — check at a store for details

XXXX SPECIAL APOLLO LINEAR

was **\$299⁵⁰** now **\$199⁵⁰**



* Full 2000W SSB *40—10M
* In-built RF pre-amp Cat D-2544
* Only 3W drive
* RF actuated — no messy control wires!
Originally \$229.50 Save \$100!
NOW REDUCED TO ONLY \$199.50
Don't miss out — Stock strictly limited.

OSKERBLOCK SWR METER



\$67⁵⁰

Why play around with the toys the rubber duck crowd use? An amateur operator needs a REAL swr meter — like the Osker Block. Full 2kW rating, individually calibrated (and attached) to show power output & swr. Cat D-1340

HUSTLER CG-144

Here's a tremendous saving: this Hustler 2 metre vertical was \$49.50. Look at the price now! 5.44lb gain, nearly 3dB loss in the price — 200 watt rating, 3/8, 24TPI base fits most standard masts. Get top performance with this 85 inch coil — and save at the same time. Cat D-4192

\$29⁵⁰

HUSTLER G6-144

Deluxe two metre coil for repeater or fixed operation. Full 6dB gain over dipole, low radiation angle, 100 watt rating. All bias and heaven too! Magnificent unit. Cat D-4200

\$89

HUSTLER 4BTV

This deluxe trapped vertical covers 4 HF bands — 40, 20, 15 & 10. (will cover 80 with optional RM 80 resonator) Low SWR, rugged construction, 2kW rating. 21" — weight only 7kg. Cat D-4150

\$144⁵⁰

Quality budget key



New magnificent precision built key. Pro quality — hours of relaxed operation; Introductory price: Cat D-7101

\$14⁷⁵

BELOW COST!

FK-2 IC Keyer reduced to below cost. Inbuilt tune & monitor facilities. Why so cheap? We got caught! We brought thousands of these and found the quality was not up to scratch. So we're getting rid of them below cost. They work, are brand new — but no guarantee, no returns at this price.



Cat D-7102

KEYER KIT

Complete kit, including paddle — plus, unmodified case. See E.A. March '78 Outstanding value. Cat K-3670



Cat K-3670

HI MOUND

One of the best hand keys on the market. The Hi Mound HK-708 — heavy duty, well built. You'll easily increase your speed because sending is so easy. For the amateur who wants the best ...



Cat D-7104

4 PAGE LIFT-OUT

REMOVE NOW FOR FUTURE REFERENCE — SEE INSIDE FOR YAESU EQUIPMENT.



YAESU from DICK SMITH

WHEN YOU REALLY CONSIDER THE ALTERNATIVES - THERE ARE NONE!



Fabulous FRG-7 Communications Receiver

A truly remarkable set - receives all bands from 0.5 to 30MHz with outstanding stability. Uses the world-renowned Wadley Loop circuit for exceptional performance. We believe this unit performs better than most receivers which sell for up to \$2000: YOU BE THE JUDGE!

EXCLUSIVE!

With every FRG-7 from Dick Smith or dealers, you receive this exclusive 6 page guide to short wave listening - written by Arthur Cushen, MBE - world famous short-wave correspondent and broadcaster.



CAT. D-2850

only
\$350

Terms available

- Comes with full instructions.
- Operates from mains power or 12V batteries
- Has beat frequency oscillator for SSB & CW reception
- State-of-the-art circuitry: 2 ICs, 22 transistors and 16 diodes.
- Listen to the world: sensitivity better than 0.7uV for 10dB S/N

See the review in MAY 1978 E.A.



EASY TERMS AVAILABLE TO APPROVED APPLICANTS

THE INCREDIBLE FT101E.... WORLD'S TOP TOP SELLING HF TRANSCEIVER -

Why settle for less ?

The complete 160M-10M HF amateur radio - just add antenna and either 240V or 12V (yes, it has an inbuilt DC-DC converter!). Rated at 260W PEP and the in-built RF speech processor makes it sound even better.

These units are so popular, we probably don't have to tell you about all their fabulous features - but call into D. S. store and we'll be happy to anyway!

Cat D-2860 \$895.00

WHY NOT BUILD YOUR WHOLE STATION AROUND THE FABULOUS FT-101E



(Left) The GTR24 world clock. Work out at a glance what the time is in all time zones. Every ham should have one.

Cat X-1054 \$33.00

(Right) YD-844A desk microphone. 500 ohm/50k switch makes this ideal for all Yaesu transceivers. Complete YOUR base station with a Yaesu microphone.

Cat C-1116 \$44.50



HOW'S THIS FOR THE ULTIMATE STATION?



FL-2100B HF
LINEAR AMP **\$540**

Time proven reliability! The 2100B is world famous for its GUTS! 1.2kW of muscle - the ideal match for the FT-901D or the FT-101E. Best value linear amp available today!

Cat D-2546

Easy terms available
on all Yaesu transceivers
to approved applicants.
Ask at your store!



Cat D-2854

FT-901 D - ALL MODE
ALL HF BAND TRANSCEIVER **\$1275**

Tomorrow's transceiver today... All mode operation - yes, even FM! This beautiful Yaesu has to be seen (and heard) to be believed. It's got features others just dream off!

Basic unit: \$1275... Add the optional memory unit (Cat D-2858 @ \$149.50) and the DC-DC converter (Cat D-2856 @ \$75.00) and still pay less than \$1500.00...

The acc plug features switchable 12V coupled to the band switch. Use our co-ax relay (Cat D-5210) to automatically switch antennas. WHY PAY MORE?



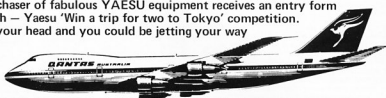
FTV-250 - 2 M.
TRANSVERTER **\$329**

FULL 2M operation when used with the FT-901D. SSB & CW for DX & OSCAR enthusiasts - FM for local work - even FM repeaters when memory unit fitted to FT-901D. Covers 144-148MHz, all solid state. Also suits FT-101E.

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YES! Every purchaser of fabulous YAESU equipment receives an entry form in the Dick Smith — Yaesu 'Win a trip for two to Tokyo' competition. Buy Yaesu, use your head and you could be jetting your way to Tokyo ...



**FLYING
QANTAS**
and staying at the luxury

Hotel Grand Palace

CONTEST CLOSES JULY 28

You'll stay at the luxury Grand Palace Hotel, and visit the amateurs paradise — Akihabara — a complete city block of electronics shops! You'll be taken on a guided tour of the incredible Yaesu-Musen factory — the home of Yaesu. It's the amateur's dream of a lifetime — and it could come true for YOU!

Full details including conditions of entry are available at your nearest Dick Smith store or participating dealer. So to be eligible buy any Yaesu item, fill in the entry form and you could be on your way to Tokyo!

Now, more than ever, it pays to buy Yaesu from Dick!

FT301 SERIES — THE SOLID STATE SYSTEM



Cat D-2870
FT-301 — 200W PEP
ALL SOLID STATE **\$995**

160 — 10M, 200 W PEP, SSB, AM, CW, FSK ... And it's completely solid state. Fantastic reject control varies crystal filter resonance to remove adjacent channel interferences. Special protection circuit to drop power if SWR rises too high ... Many other features too! Just add 12V and an antenna!

Cat D-2872 **\$170**
FP-301 — POWER SUPPLY

Matching power supply for the FT-301, 301S, FT-7, etc. 13.5V fully regulated at 25 amps! Makes an ideal bench supply, too.

Calling all NOVICES:

Why waste money on a full-power rig you aren't allowed to use? The FT-301S is the novice version of the 301. 20W out, 80—10m. And nearly \$300 cheaper!

Cat D-2880 **\$710**

Dick has an enormous range of accessories for amateur use — and the list is growing daily! Call in and discuss your requirements today.



**FULLY APPROVED
13.8V MAINS SUPPLY
4 AMPS PEAK
(2A CONT)**

\$39⁵⁰



Operate the FT-7, FT-227R, etc from our FULLY APPROVED power supply. Why take chances with un-approved supplies? Cat M-9545

EASY TERMS AVAILABLE TO APPROVED APPLICANTS ON ALL ITEMS PRICED \$111 OR MORE.



FT-227R —
FULL 2M RIG **\$335**

As reviewed in the March issue of Electronics Australia. Full 2 metre, synthesised FM unit with memory. Ideal for repeaters and duplex operation. Best value rig available today! Cat D-2890



YC-500S —
500MHz COUNTER **\$380**

Fabulous professional quality — 500MHz counter. As reviewed in April E.A. 240V or 12V operation. And it's even cheaper if you have a sales tax exemption! Cat D-2892



FT-7 — NEW HF
MOBILE RIG **\$539**

Here it is! The new HF solid state 80 — 10 metre mobile transceiver. It's ideal for novice use, too. The best mobile unit going! Cat D-2866



FL-110 —
200W LINEAR **\$210**

Use the FT-7 or FT-301S as a full-power unit with the 200W linear amplifier. One knob band switching, no tuning required. Cat D-2884

STOP PRESS: NEW FRG-7000 DIGITAL RECEIVER/CLOCK NOW IN. CALL IN TO STORES FOR DETAILS. (Cat D-2848)

BEAM BUILDERS

Dick now has stocks of two sizes of aluminium tubing plus suitable antenna brackets for you to build your own beams. Call in and pick up your free leaflet on building 2m beams. So simple: you'll wonder why you didn't build one before!

VHF POWER AMP

Can't work that repeater? Need a little more oomph? Build an amplifier. 45 watts out on 2m. Very simple, highly reliable transistor circuit. Full RF switching, ideal for mobile use (12V). Build the basic PCB, or put in a case as pictured. (\$27.50 price applies to PCB and electronics only - case & heatsink extra) Cat K-3132.

Extras (as shown in picture)
Heatsink (Cat H-3460) \$4.75
Box (Cat H-2743) Undrilled, plain panels \$4.20
PL-259 connectors (Cat P-2340) 2 required \$1.45 ea



27⁵⁰

As shown above with all extras: \$39.95

4A,13.8V under \$30

Complete kit - ideal for the FT-7 and FT-227R, etc. Complete kit, including case and instructions. Save real money building your own! Cat K-3448.

2A cont. **\$29⁵⁰**

Heavy duty version - 5A continuous. Electronics only, case and heatsink extra. Cat K-3448.



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What does every amateur need?

A dipper, of course - the most essential piece of test gear in the shack! Tunes circuits, checks radiation, use as a signal generator... the uses of a dipper are almost endless! This Leader transistor dipper is a fully portable, professional quality unit. Incredible value for money.

\$99⁵⁰

Cat O-1322



Books

Dick has an **ENORMOUS** range of books for amateurs, hobbyists, beginners, professionals... The titles here are only a small sample: call in to a store today and see the rest!



ARRL HANDBOOK
The standard reference manual for amateurs the world over. New 1978 edition is updated. Isn't it about time you replaced that 1969 edition?
Cat K-2218... \$12.75



RADIO HANDBOOK
By William Orr. An incredibly comprehensive book on amateur radio communications, dealing with basic theory, design, testing & construction. Over 30 chapters packed with information. THE essential reference.
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OSCAR
Do you know OSCAR? You should. He's the friendliest amateur going - and he'll talk to you if you know how. All you need to know about this exciting facet of amateur communications.
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P.S. OSCAR is an amateur satellite.

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20mm o.d. x 1.6mm x 2m length (for boom) Cat D-4655... \$4.00
18mm o.d. x 1.2mm x 2m length (for elements) Cat D-4654... \$2.00

BRACKETS



Element to boom mount. Low cost Nylon bracket. Cat D-4656... \$8.55



Element to boom mount. Heavy duty all metal. Cat D-4652... \$1.00

FREE! BUILD YOUR OWN 2 METRE BEAMS

Data sheet gives information on 2m beam building. Ask for it!

Converters & Preamps

Extend the range of your HF transceiver to VHF. Copy 6m DX or OSCAR on 2m. Near little units complete with xtal - 28 to 30MHz output. 30dB gain, too.

6 metre version... Cat D-3836... \$29.50
2 metre version... Cat D-3832... \$29.50
REDUCED \$10 FROM LAST YEARS PRICES!

NEED A LITTLE MORE GAIN?
These low noise preamps give you 20 to 30dB more. You can even mount them right at the antenna for lowest possible noise figure.

10 metre version... Cat D-3827... \$25.90
6 metre version... Cat D-3806... \$25.90
2 metre version... Cat D-3802... \$25.90
SAVE \$13.10 - WERE \$39.00 EACH!



SAVE!

NOVICES...

Here's the ideal way to get on 80 metres: Build this converter. Converts any 27MHz transceiver to work on 80 - produces a full 30 watts PEP of SSB. And it's incredibly simple to build. Was \$99.50 - save \$10.00.
Cat K-3134



\$99⁵⁰ \$89⁵⁰

Banish TVI FOREVER!

The **ULTIMATE** in low-pass filters!

Precision built, 4 section filter. Massive power rating - 5000 W PEP on SSB. Maximum attenuation is on TV channel 2 - 75dB. Insertion loss is less than 0.5dB. 52 ohms impedance. Has SO-239 connectors.

\$37⁵⁰
Cat D-7086



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Brisbane 1/2 Hour meter.

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REPORT ON 1978 FEDERAL CONVENTION

What is a Federal Convention?

You are a member of a Division. If you want to keep in touch you go to meetings, especially the Annual General Meeting.

But how about Divisions? Well, they meet together once a year in the Annual General Meeting which is called the Federal Convention.

And what goes on at this annual Convention? Call in on Ch. 4, registration, fox hunts, displays of goodies, prizes?

Sorry, the only prizes are what the WIA can extract out of the Government in the form of better operating conditions. And it is at the Federal Convention that these things are discussed and firmed up from ideas brought up by the Divisional delegates. In turn these ideas come from you, the member.

You see, all the Divisions agreed long ago that one big strong voice is better for amateur radio in Australia than a lot of little voices. And that is what the Federal WIA is all about.

Anyway, this year as in 41 previous years, the divisions were all represented. Each by its Federal Councillor and all but one, by Alternate Councillors, and by other technical experts too.

For the 1978 Federal Convention dealt with a number of electrical questions and the need to have Australia-wide standardisation. Also dealt with many Novice licensing matters and such things as encouraging members, recruiting, public relations and many others.

The Convention ran through from the Friday evening preparations, Saturday, Sunday, to Monday, 24th April, with many late night working parties trying to resolve many questions for final discussions in the formal part of the Convention. Around 45 hours of good solid work without any relaxation.

The Federal Councillors were Rex Rosedale VK1QS, Tim Mills VK2ZTM, John Payne VK3AED, Norm Wilson VK4NP, Ian Hunt VK5XQ, Neil Penfold VK6NE, and Peter Frith VK7PF. The Alternate Councillors were Ted Howell VK1TH and Andrew Davis VK1DA, Phil Card VK2ZBX, and Ian Mackenzie VK2ZIM. John Adcock VK3ACA, Alex McDonald VK4TE, Colin Hunt VK5HI and Reg Emmett VK7KK for their respective Divisions, assisted by Ken Hargreaves VK2AKH, John Ingham VK5KG and Eric Bugge VK3ZZN.

The Executive members were there in force — David Wardlaw VK3ADW, the Federal President, Peter Wolfenden VK3ZPA, the Executive Vice-chairman, Keith Rogel VK3YQ, Hon. Fed. Treasurer, Ken Seddon VK3ACS, Graeme Scott VK3ZR and Jim Lloyd VK3GDR, assisted by several Federal officers present for various items, including Michael Owen VK3KI on IARU, Bob Arnold VK3ZBB on Satellites, Al Chandler VK3LC on Intruders, and Bruce Bethors VK3WJ, Managing Editor of AR. Guest on Saturday was Mr. Jim Wilkinson of the Postal and Telecommunications Department. Several other amateurs dropped in from time to time to find out what was going on.

The Federal Councillors are of course elected by respective Divisions and when acting jointly they are known as the Federal Council. In between Conventions the Editor of AR, Guest on the work of the Institute, but only in line with the rules laid down by the Federal Council. The Executive is elected at each Federal Convention. This year the members were elected en bloc except that Jim Lloyd had to drop out because of his transfer to Canberra and John Bennett VK3ZA came in to replace him.

The Executive is assisted by many Federal Committees all of which render annual reports at the Federal Convention. These Committees and Coordinators deal with IARU affairs, Satellites, Intruder Watching, Repeaters, Publications, Education, Historical material, Contests, QSL Bureau, Awards, VHF/UHF, RTTY and WICEN.

Outside the formal hours of the Convention eight different working groups got down to work on individual groups of questions. As far as prac-

ticable one member of each Divisional delegation was appointed to each working group thus enabling everyone to contribute his own expertise.

There is seldom more than one or two outstanding questions to be resolved at a Convention but this year was an exception. Firstly there was of course IARU and WARC 79 preparations. Then there were a group of items on Novice licensing and examinations, another group of items dealing with recruiting, publicity and public relations. Another one concerned "Amateur Radio" and publications. And finally numerous individual items, budget and organisational matters.

Mr. Jim Wilkinson brought with him the final syllabus for NAOC and approval for a joint WIA Departmental Standing Committee to resolve amateur radio affairs. In addressing the Convention and answering questions for nearly two hours he covered a vast range of interesting subjects from new proposed legislation to GBers, from Ch. 0 and 5A to Morse speeds, from WARC 79 to greater self-regulation and from examination procedures to reciprocal licensing.

The audited accounts for 1977, having been pre-circulated in accordance with the requirements of the Companies Act, were tabled and are reproduced in this issue of AR. The Budget for 1979 was debated but no final decisions on this will be reached until 31st August. A budget covering the various expenses for WARC 79 representations was debated and passed. Additional WARC 79 funds would be most welcome since the amounts budgeted could only be related to the funds (and interest) actually in hand. The preliminary budget for 1979 showed that with a continuing influx of new members there should not be any need to ask for an increase in the Federal dues (\$15 last year and this year also).

The costs of AR must be expected to increase by reason of inflation and many other factors too numerous to list here. AR was one item discussed in depth by a working party.

The many annual reports were debated and votes of thanks expressed to the authors. The Executive Report is printed elsewhere in this issue. A great amount of time was devoted to IARU and WARC 79 affairs since these are of prime importance to the future of the Amateur Service everywhere, including Australia.

On current affairs the Novice licensing conditions, examinations and allied matters received careful attention in a working group as well as in formal debate. Almost as much discussion ensued on the question of recruitment, services to members, publicity and publicity material. One outcome of this Convention will be the availability of video tapes in colour for the use of Divisions, possibly on a rotational basis.

Looking very very briefly at the fate of Agenda Items —

VK4 will prepare for Executive a set of guidelines to aid the implementation of a dynamic membership recruiting drive by all Divisions.

Ways and means to be examined by an Executive Working Group to suggest the provision of benefits and services for WIA members.

Solicit further funds for WARC 79 from sources outside WIA.

Continue present work on posters as display material, assistance from Divisions and members most welcome.

Leave aside temporarily any logo or badge redesign.

Uniform policy for handling outwards QSL cards not approved.

Majority in favour of seeking Novice segment extension on 80m from 3225 to 3625 kHz, also or alternatively approval for Novices to use WICEN 80m net frequencies to join in WICEN exercises.

Not approved were: Novices on 2m, common band for all licensees, increase in power for Novices, 10m band repeaters.

Expansion of 2m FM activity by the use of 25 kHz channels — Fed Repeater Sub-Committee to propose the guidelines.

No recommendation was made about adopting a uniform numbering system for the 2m band at present because of the use of different systems already.

Fed. Repeater Sub-Committee to propose suitable national repeater and simplex channels on 2m for ATV liaison.

Seek approval in principle for 6m band repeaters. VHFAC to work on 10m beacon licensing conditions.

Existing 70cm bandplan is satisfactory as far as repeater and simplex operation is concerned. Encourage greater use of 70cm band.

Approval be sought for linking of amateur repeaters.

Seek approval for increased power for ATV as a low density signal.

Propose to move the upper ATV channel down by 2 MHz was not approved.

Seek a permanent allocation in TV Band 4 or 5 for an ATV experimental segment, also to seek an amateur band at about 40cm in the event of losing the 50cm band or part of the 70cm band.

Seek approval for one licence fee for multi-mode facility.

Keep on pressing for no TV Channels 0 and 5A in same geographical area and no further allocations of these be made. Pressures still to continue for the return of 50 to 52 MHz segment to amateurs.

Seek licence endorsements for higher CW speeds.

Standard formula for life membership proposal was withdrawn.

Negotiate no AOC multi-choice exams until agreed syllabus is adopted.

Executive to report later on compensation for loss of 27 MHz band.

Repeater Sub-Committee to continue work on repeater conditions.

Negotiate for issuance of postage stamp promoting amateur radio.

PR agency or service engagement as a long term objective.

Recommended that for standardisation 18 channel CB equipment conversion to 28 MHz is on the basis of a frequency shift of 1.385 MHz.

Seek international agreement for RTTY frequencies on HF.

Expenses of Alternate Councillors attending future Federal Conventions be met by Executive.

The Federal President and Mr. P. A. Wolfenden were selected as WIA delegate and assistant respectively at the IARU R3 Conference in Bangkok in October.

The Fed. President and Mr. Owen attend the NZART Conference.

These include most of the Agenda Items discussed but others were withdrawn because work on them was completed or was satisfactorily in progress at the time.

One of the more pleasant ceremonies to form part of future Federal Conferences is the handing over of the RD Trophy to the winning Division (if a change occurs). At the Convention Ian Hunt formally handed over the splendidly refurbished trophy to Ted Howell, the President of the ACT Division.

Submitting the usual declarations the following is the 1977 year Statement of Income and Expenditure and Balance Sheet as at 31-12-1977 and the Report of the Executive for the year. The Auditor's Report is also reproduced.

**THE WIRELESS INSTITUTE OF AUSTRALIA
A COMPANY LIMITED BY GUARANTEE
INCORPORATED IN VICTORIA UNDER
THE COMPANIES ACT 1961**

In accordance with the Companies Act, 1961, the Executive state the following:—

(a) The names of the Executives in office at the date of this report are:—

Dr. D. A. Wardlaw	VK3ADW
Mr. P. A. Wolfenden	VK3ZPA
Surg. Rear Adm. S. J. Lloyd	VK3GDR
Mr. K. V. Rogel	VK3YQ
Mr. K. C. Seddon	VK3ACS
Mr. G. F. Scott	VK3ZR

(b) The principal activity of the Wireless Institute of Australia is to:—

1. Represent generally the views of persons connected with amateur radio in the Commonwealth of Australia, its territories and dependencies.

2. Promote the co-operation between the Divisions in the encouragement and development of amateur radio.

3. Safeguard the interests of the Divisions and the members in relation to frequency allocations, rights and privileges.

4. Promote the development, progress and advancement of amateur radio in all matters in relation to amateur radio in general.

(c) The surplus of income over expenditure for the year ended 31st December, 1977, was \$10,857.00, compared with \$8,728.00 for 1976. There is no provision for income tax required as the Company is exempt under Section 103A(2) of the Income Tax Assessment Act.

(d) During the year transfers from and to reserves and provisions were:—

1. Transfer of \$627.00 from Reserve Fund to General Funds.

2. Provision for Amateur Satellites. The provision formerly called Project Oscar and contributions to Project Australis (\$13.00) have been consolidated to a new Provision and an amount of \$1,000.00 provided for the year, to total \$1,613.00.

3. Provision for Superannuation has been increased to \$2,250.00 (\$1,250.00).

(e) The Executive have taken reasonable steps, before the Statement of Income and Expenditure and Balance Sheet were made out, to ascertain that action had been taken in relation to the writing off of bad debts and making of provision for doubtful debts and to cause all known bad debts to be written off and adequate provision to be made for doubtful debts.

(f) At the date of this report the Executive are not aware of any circumstances which would render the amount written off for bad debts, or the amount of the provision for doubtful debts, inadequate to any substantial extent.

(g) At the date of this report the Executive are not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.

(h) At the date of this report no charges exist on the assets of the Institute which has arisen since the end of the financial year and does not secure the liabilities of any other person.

(i) There does not exist any contingent liability which has arisen since the end of the financial year.

(j) No contingent liability or any other liability has become enforceable within the period of twelve months after the end of the financial year which in the opinion of the Executive will or may affect the ability of the Institute to meet its obligations when they fall due.

(k) Since the end of the previous financial year the Executive have not received or become entitled to receive a benefit by reason of a contract made by the Institute or a related corporation with the Executive or with firms of which they are members or with companies in which they have substantial financial interests.

(l) The results of the Institute's operations during the financial year in the opinion of the

Executive not substantially affected by any item, transaction or event of a material and unusual nature. There has not arisen in the interval between the end of the financial year and the date of the report any item, transaction or event of a material and unusual nature likely in the opinion of the Executive, to affect substantially the results of the Institute's operations for the next succeeding financial year.

Members of the Executive
(Sgd.) D. A. WARDLAW
(Sgd.) G. SCOTT

**STATEMENT OF INCOME AND EXPENDITURE
FOR YEAR ENDED 31st DECEMBER, 1977**

	1977	1976
Income:		
Members' Subscription	\$62,841	\$60,005
Interest Received	2,897	978
Surplus — Log Books	53	—
Call Books	3,038	—
Magpups	4,230	2,599
	<u>72,859</u>	<u>63,580</u>
Expenditure:		
Amateur Radio (Note 1)	\$20,455	12,929
Audit Fees	492	210
Bank Charges	658	738
Convention Expenses	2,438	2,096
Catering and Entertainment	251	—
Committee Expenses	95	204
Depreciation	800	393
EDP Expenses	2,090	1,400
Electricity and Power	257	—
General Expenses	843	654
Insurances	495	691
Membership Recruiting	1,249	1,404
Postage and Freight	2,025	1,814
Provision for Amateur Satellites	1,000	—
Project Australis	—	997
Rent and Rates	2,137	2,084
Repairs and Maintenance	464	357
Superannuation	1,000	1,000
Stationery and Printing	1,778	2,838
Salaries and Secretarial	21,847	22,201
Travelling Expenses	1,610	2,225
Telephone	608	617
	<u>62,002</u>	<u>54,852</u>
Net Surplus:		
Accumulated Funds Brought Forward	14,795	6,067
Add Transfer from Reserve Fund	627	—
	<u>15,422</u>	<u>6,067</u>
Accumulated Funds Carried Forward	\$26,279	\$14,795

**NOTES TO AND FORMING PART OF
THE ACCOUNTS**

AMATEUR RADIO (Note 1)

	1977	1976
Income:		
Advertising	\$25,860	\$21,707
Subscriptions	2,274	2,105
AR Sales	1,139	—
Inserts and Sundries	1,257	1,348
	<u>30,530</u>	<u>25,160</u>
Expenditure:		
Awards	\$90	\$90
Bad Debts	280	—
Honorariums	3,810	3,340
Postage	6,827	6,062
Publishing, Printing and Distribution Costs	35,287	24,475
Salaries	3,666	3,105
Travelling Expenses	1,025	1,019
	<u>50,985</u>	<u>38,091</u>
Excess Expenditure Transferred to General Account Representing Cost of AR to Members	\$20,455	\$12,931

BALANCE SHEET AS AT 31st DECEMBER, 1977

	1977	1976
Members' Funds:		
Accumulated Funds	\$26,279	\$14,795
Reserve Fund	—	627
Special Funds — ITU	9,521	8,853
WARC	8,604	—
Ron Wilkinson Achievement Award	1,100	—
IARU	4,863	3,985
	<u>\$51,167</u>	<u>\$28,060</u>
Represented by:		
Current Assets:		
Commonwealth Bank — General Account	\$—	\$9,597
Commonwealth Savings Investments	22,685	11,038
Australian Savings Bonds	23,100	8,000
Australian Resources Development Bank	2,200	2,200
Sundry Debtors — Less Provision for Doubtful Debts	(2,000)	(2,000)
Stock on Hand — at Cost	6,254	4,950
	<u>79,603</u>	<u>46,096</u>
Non-Current Assets:		
Furniture and Fittings — at Cost	—	—
Less Provision for Depreciation	1,697	1,5
	<u>80,300</u>	<u>47,671</u>
Deduct:		
Current Liabilities:		
Commonwealth Bank — General Account	\$5,182	—
Sundry Creditors	4,526	1,053
Subscriptions in Advance	11,325	12,645
Provision for Superannuation	3,424	2,250
Provision for Amateur Satellites	1,613	600
Provision for Holidays and Long Service Leave	2,763	2,763
Deposit VK4	300	300
	<u>29,133</u>	<u>19,611</u>
	<u>\$51,167</u>	<u>\$28,060</u>

**AUDITORS' REPORT TO THE MEMBERS OF THE
WIRELESS INSTITUTE OF AUSTRALIA**

1. In our opinion the attached accounts give a true and fair view of the state of the Institute's affairs at 31st December, 1977, and of its surplus for the year ended on that date.

2. As required by the Companies Act 1961, the report as follows:

In our opinion:

(a) The attached accounts are properly drawn up (i) so as to give a true and fair view of the matters required by Section 162 to be dealt with in the Accounts; and

(2) in accordance with provisions of that Act. (b) The accounting records and other records, and the registers, required by the Act to be kept by the Company have been properly kept in accordance with the provisions of that Act.

HEBARD & GUNNING, Chartered Accountants.
(Sgd.) P. W. HEBARD
Partner

WIRELESS INSTITUTE OF AUSTRALIA

1. Once again this year the Executive has continued to provide members with Federal news by means of WIA NEWS and the Federal News Broadcast tapes.

2. This of course means a continuous report on WIA Federal activities.

3. However I will attempt to consolidate most of the more important items in this Annual Report.

4. The Executive as elected at the last Federal Convention were as follows:

Myself, David Wardlaw VK3ADW, as President and Chairman.

Peter Wolfenden VK3ZPA as Executive Vice-Chairman and Chairman VHF/UHF Advisory Committee.

Keith Roper VK3YO, who is Hon. Treasurer and Chairman of Finance Sub-Committee.
Ken Seddon VK3ACS, who is Chairman of the Federal Repertoire Sub-Committee.
Graeme Scott VK3ZR, who is the Federal Education Co-ordinator.

Bill Roper VK3ARZ — Early in the year Bill Roper found it necessary to resign as business was frequently taking him out of Melbourne.

Fortunately, the transfer of Jim Lloyd VK3COR to Canberra was postponed for another year and he was persuaded to re-join the Executive.

5. I would like to commend my fellow Executive members on all the time and effort they put into the WIA.

7. Bruce Bathols VK3JUV as Managing Editor of Amateur Radio and Chairman of the Publications Committee has attended as many Executive meetings as possible as it is essential there be close liaison between the magazine and the Executive.

8. At this stage I would like to pay tribute to our Secretary/Manager, Peter Dodd VK3CJF, for his loyal and valuable assistance throughout the year. He is a tireless worker for the WIA.

9. Again we were able to make use of valuable advice from various experts who were able to attend Executive meetings.

10. Attendances at Executive meetings:

Dr. D. Wardlaw	11
Mr. P. A. Woffenden	12
Mr. V. R. Rogers	10
Mr. J. R. Rogers	12
Mr. K. C. Seddon	12
Mr. G. F. Scott	9
Mr. W. E. J. Roper	1
Mr. B. Bathols	10
Total number of meetings:	12

11. The other Federal Officers were:

IARU RG Liaison Officer: Mr. M. J. Owen VK3KI.
Chairman WIA Project Australia: G. In. absence.
Federal Intruder Watch Co-ordinator: Mr. A. W. Chandler VK3LC.

Historical Officer: Mr. G. M. Hull VK3ZS.
Federal Contest Manager: Mr. K. Phillips VK3AUG.
Federal CSL Manager: Mr. R. E. Jones VK3JF.
Federal Awards Manager: Mr. B. W. Austin VK5CA.

Chairman, Fed. RTTY Committee: Mr. C. M. Walker VK2BXX.
Fed. WIGEN Co-ordinator: Brig. R. Roseblade VK1QJ.

Fed. EMC Co-ordinator: In. absence.

VISITS

12. During August I was able to spend a week in West Australia. As this is such a long trip I made a point of trying to see as many members as possible. In addition to meetings in Perth I was able to get to Albany, travelling via Wagin, and back to Perth via Busselton and Bunbury.

13. Whilst in Albany I attended a meeting of the Southern Electronic Group. It was interesting to see the western end of the UHF world records.

14. On my visits interstate I appreciated the keen interest shown by members in amateur affairs, particularly WARC.

15. In June I attended the 25th Annual SW Zone Convention of the NSW Division held in Griffith. The hospitality of the Zone was very much appreciated and the organisers are to be congratulated. Again the opportunity to have person to person contact with many members was of great value to me.

16. During November I opened a seminar on Antennas presented by the Frankston and Mornington Peninsula Amateur Radio Club in Melbourne. The attendance showed that this activity filled a well needed want and it is pleasing to see the idea has caught on in NSW.

NEW ZEALAND

17. As the time since the last IARU Region 3 Conference grew longer and the preparation for WARC grew more intense it was increasingly apparent that close consultation between the WIA and the NZART was necessary.

18. On the weekend of the 28th November, accompanied by IARU Region 3 Director Michael Owen VK3KI, I visited Wellington, NZ, where we conferred with the President of the NZART, Arthur Godfrey ZL3HZ, GPO Liaison Officer Doug Gorman ZL1CZ, IARU Region 3 Director and IARU Liaison Officer for NZART Tom Clarkson ZL2AZ, his deputy

Fred Johnson ZL2AMJ, and other councillors of the NZART. Naturally WARC was discussed. The sum total of the New Zealand preparations for WARC 79 had not reached as advanced a stage as in Australia. However there was a fruitful exchange of ideas. Extensive discussion took place on the IARU in particular with reference to its role in the preparation for WARC 79. Also discussion took place as to the value of IARU representation on a national delegation. The NZART has inaugurated the collection of funds for sending a delegate to WARC 79.

19. In a lengthy discussion on domestic matters of common concern it was interesting although not comforting to find that so many of our own problem areas are not unique.

20. Since returning I have passed on a great deal of detailed information on the New Zealand amateur exams to our Education Co-ordinator.

21. Tight import restrictions for financial reasons prevented the development of the CB piracy problem in New Zealand that occurred in this country.

WARC 79 PREPARATIONS

22. Since the last annual report a preliminary draft of the frequency table was presented to the APG for consideration. As this was a preliminary draft it was allocated by the APG to the APG Chairman. However, the second draft will be available for publication shortly.

23. A lot has been made of the FCC Notices of Inquiry. However, it must be realised that the FCC is only dealing with the private user side of the preparation and the office of Telecommunications' policy is preparing plans on behalf of the Government users and that the two preparatory documents have to be combined to make up the Draft USA proposals.

24. However more weight can be put, for instance, on the draft proposals published by the Canadian DCC. It is interesting to see that Canada has supported the new bands at 10 MHz and 24 MHz and also the proposal to start the 7 MHz band at 6.900 MHz.

THE AMATEUR SERVICE AND THE CCIR

25. The draft question on the Amateur Radio Service has been submitted to Study Group 8 of the CCIR.

INTERNATIONAL

26. During the past year the President of the IARU, Noel Eaton VE3CJ, invited me to attend a meeting of his advisory group, sometimes known as the International Working Group. This group was to meet in Geneva at the same time as the Aeronautical WARC. As far as I was concerned there were three very good reasons for attending this meeting —

(a) It would enable me to participate in planning IARU policy and tactics for the period immediately leading up to WARC 79;

(b) It would enable me to observe a WARC in operation; also I would be able to investigate the accommodation and cost of living situation in Geneva; and

(c) It would give me the opportunity of meeting delegates who will also be in Geneva in 1979 on behalf of other countries.

27. I was not disappointed as personal discussions enabled the clarification of many complex issues with the exchange of ideas. The role of the IARU teams was discussed at length and also the importance of National amateur delegates.

28. A seminar conducted by Merle Glunt VK0KN on ITU Conference procedure was invaluable as was sitting in the IARU Chair at committee meetings as an official observer.

29. The complexity of the ITU system is enormous and as this was only a small conference the congestion and activity at WARC 79 is mind-boggling. One thing that stands out in Geneva, however, is the high cost of living.

30. I found it of great value to have the opportunity to meet delegates from many countries from all regions. There was a sprinkling of amateurs amongst the delegates as also in the ITU HQ itself. I was honoured to have an informal meeting with the Deputy Secretary-General of ITU, Mr. Dick Butler.

31. The direct information I gained on the running of a WARC and contacts with the delegates

from so many countries alone made the trip worthwhile.

32. Whilst in London the RSGB was visited. Many ideas were gleaned which will be useful in WIA operations.

33. On the return journey a visit was made to Japan where I was interested to find how much progress has been made in their preparation for WARC 79. They hope to have an amateur representative on the WARC delegation. In Korea I also found a great awareness of WARC 79 and again the hope to have an amateur representative on the delegation.

34. Ten large parcels of technical magazines have been sent to the Indonesian Society ORARI and informal discussions were held in Melbourne between one of their Vice-Presidents, Kakkum Lumenta YB0BY, and Peter Woffenden.

EXAMINATIONS

35. There are many areas of concern to the WIA on this general subject. The frequency of the examinations, particularly in relationship to the Novice part is one. We feel that two a year is insufficient and have made representations to this effect. To date our suggestion has been rejected. However, in view of the recession amongst the daily press with regard to staff increases, the matter will be pressed with increased vigour.

36. Another area of grave concern is the lack of provincial examination centres, particularly in WA. Again it is the potential Novices who suffer the greatest disadvantage. The WIA has suggested several ways in which the problem could be overcome but with no results.

37. Since the introduction of the Novice level the importance of establishing a syllabus has become very important. Important because it is essential that, firstly, the candidates and, secondly, the instructors know to what level the various topics will be examined and, thirdly, for the examiner himself not to stray far from established standards. A vague syllabus is probably satisfactory when the lecturer is also the examiner but not so when there are candidates spread throughout the country all tutored by different instructors.

38. In this area during the preceding year there has been extensive activity by the WIA Education Co-ordinator and his group not only in Victoria but also in NSW and Queensland.

39. A study guide based on the P. and T. Department's syllabus has been prepared and awaits authorisation by the P. and T. Department. Also a question bank has been prepared of questions at a Novice level.

40. Another problem is the use of the Department of the strict ITU Morse character constitution and spacing of the five words per minute Novice exam. It seems logical that the Novice should be aiming towards the highest AOC speed level and hence characters sent at 10 w.p.m. speed with accentuated letter and word spacing would be the correct thing to do.

CB (CRS)

41. As expected, the introduction of CB eventuated with the subsequent withdrawal of the 11 metre amateur band. Despite the many promises made prior to the introduction of CB that the loss of 11 metres would be compensated for the loss of a very minor concession that Novices would be able to pay for a combined CB and Novice licence at just the CB licence fee of \$25.00.

42. This lack of compensation is very unsatisfactory as the amateurs through the WIA acted in good faith.

Rest assured the Executive has not lost sight of this slight and will not let the matter rest. There are still many areas in which the Government could compensate us for our loss and without causing any conflict with other radio services and it is hard to understand why no action has taken place.

43. Submission was presented to the P. and T. Department on behalf of the WIA on matters concerning the new Act which, on present indications, appear to be no nearer to enactment than it was a year ago.

The submission took into account the nature of the Amateur Service and analysed the use of both receivers and transmitters. The use of receivers

is also governed under the Broadcasting and Television Act. The point was made that we hoped that in structuring new legislation care is taken to ensure that a prohibition is sufficiently realistic to avoid unreasonable constraints on legitimate possession.

VISIT TO MINISTER

44. Last April the then Minister for P. and T., Mr. E. Robinson, received a deputation from the WIA which included the Federal President, NSW Divisional President and the present President of the ACT Division.

The main reason for this meeting was to put the WIA's situation with regard to the impending introduction of CB. The point was strongly made that the proposed CB service and the Amateur Radio Service are very different in a number of vital ways. The opportunity was taken to raise the matter of representation on the Australian delegation to WARC 79. The proposal received a favourable hearing.

45. Over the last year a backlog had developed of matters raised with the P. & T. Department by the WIA on behalf of the Amateur Service. Amateurs were urged to contact their MPs and complain about the apparent lack of action. One area of particular concern is the unlawful use of transmitters (easily and apparently "lawfully" obtained) on amateur bands. We also note that the amateur bands are not the only areas of intrusion.

JOINT COMMITTEE

46. It has been proposed that a committee of Federal WIA and Central Office RFMD be set up to liaise on amateur matters and that this committee could start by trying to straighten out some of the unresolved questions posed over the last several years.

HANDBOOK

47. The P. and T. Department has indicated that they again wish to proceed with the revision of the Handbook for Amateur Operators. On a previous occasion some years ago when the Department proposed a revision a great deal of material was prepared and forwarded to them; unfortunately, nothing further was heard. In the meantime, the Novice licence had been introduced. This of course requires many alterations in the Handbook.

Geoff Taylor VK5TY has produced a working draft of suggested alterations.

48. There are of course two major factors which must not be lost sight of when a revision of the Handbook is considered —

- the new Act may easily require the alteration of some of the regulations governing the Amateur Service, and
- the general WARC of the ITU to be held in 1979 may alter some of the radio regulations of the ITU which would have to be reflected in the Australian regulations.

49. In studying the Australian Radio Regulations under the WT Act it is apparent that they are out of date. At the very core of the situation is the definition of Amateur Radio being much narrower than that given in ITU RRI78 which is a "Service of self-trained intercommunication and technical investigations carried on by amateurs that is, duly authorised persons interested in radio techniques solely with a personal aim without pecuniary interest".

50. The Australian regulations are planned with considerable emphasis on the experimental side whereas the ITU has a separate definition for an experimental station and specifically states this definition does not include amateur stations. It is also in the best interests of all to have the minimum of restrictive regulations consistent with good housekeeping relying on the self-regulatory ability of the service.

CALL BOOK

51. The 1977 Call Book, the first of the new contract, was printed from WIA EDP records. Call sign information is now on computer file which can easily be updated. As far as WIA members are concerned this information is as up to date as the membership records; however, with non-members we are dependent on the departmental records with which we are provided and which contain numerous errors and omissions.

Frankly, the Call Book was a little disappointing but we must concede that it was a first time for the method of production. Alterations have been made to the EDP programme already which will improve the format.

OUR MAGAZINE "AMATEUR RADIO"

52. Again the Managing Editor, Bruce Bathols VK3UV, and the Publications Committee are to be congratulated on the high standard they have maintained. Despite the problems caused by the Victorian power strike they produced the bumper December issue "Amateur Radio" — Australia's Window on the World". The production of this issue was the result of discussions at the 1977 Federal Convention and the decision to investigate the production of a Year Book of Amateur Radio. On assessment of our resources it was decided that a separate publication would be too much to be undertaken by the Publications Committee. An enlarged December issue was printed with extra copies for sale to the public.

LOG BOOK

53. The Victorian Division found itself unable to go ahead with further printing of the WIA Log Book. This was a facet of WIA publishing left with them at the time the Federal body took over the publishing of "Amateur Radio" and the Call Book. The decision was made to undertake this work and 1000 were printed for distribution through "MAG-PUBS".

54. "Magpubs" continues to be a service to the members, while providing a small profit for both the Federal Office and the Divisions. In view of the savings provided it is a wonder that more members do not make use of this service. Possibly the absence of specific advertising may have something to do with this.

TABLE 1 (Previous year in brackets)

	Total Licensees	WIA licenced members and 2nd call signs	% members to total licensees	Other WIA members	Total WIA members
VK1	187 (144)	103 (79)	55 (66)	37 (31)	140 (110)
VK2	2935 (2383)	1199 (978)	41 (48)	241 (287)	1440 (1245)
VK3	2407 (2219)	1200 (1078)	50 (49)	414 (324)	1614 (1411)
VK4	1018 (851)	606 (503)	60 (59)	150 (154)	756 (657)
VK5/8	999 (907)	580 (499)	58 (55)	213 (180)	793 (679)
VK6	642 (581)	342 (288)	53 (50)	94 (80)	436 (368)
VK7	275 (246)	161 (154)	59 (63)	67 (67)	228 (221)
Other	20 (10)	—	—	—	—
	8483 (8919)	4171 (3588)	49 (50)	1216 (1103)	5387 (4691)
				= 23% of all members	

TABLE 2. Distribution of Grades of Licensees — Full Calls (= 60% of all calls)

	Total Licensed	% of total	Members of WIA	Percentages of total Div. Full calls	Percentages of total Full call Licensees
VK1	138 (114)	(3)	75	54	1
VK2	1785 (1653)	(35)	810	45	16
VK3	1421 (1378)	(28)	817	57	16
VK4	585 (553)	(11)	402	69	8
VK5/8	597 (586)	(12)	377	63	7
VK6	423 (414)	(8)	256	61	5
VK7	168 (164)	(3)	98	58	2
	5117 (4862)	—	2835	55%	—

TABLE 3. Distribution of Grades of Licensees — Limited Calls (= 30% of all calls)

	Total Licensed	Members of WIA	Percentages of total Div. limited calls	Percentages of total limited Licensees
VK1	33 (27)	21	64	1
VK2	755 (663)	273	36	11
VK3	831 (788)	314	38	13
VK4	317 (285)	140	44	6
VK5/8	297 (285)	137	46	6
VK6	162 (139)	52	32	2
VK7	85 (80)	49	58	2
	2480 (2267)	985	=40	—

TABLE 4. Distribution of Grades of Licensees — Novice Calls (= 10% of all calls)

	Total Licensed	Members of WIA	Percentages of total Div. Novice calls	Percentages of total Novice Licensees
VK1	16 (3)	7	44	1
VK2	395 (65)	116	29	13
VK3	155 (53)	69	45	8
VK4	116 (13)	64	55	6
VK5/8	105 (36)	46	44	5
VK6	57 (25)	34	60	4
VK7	22 (2)	14	64	2
	866 (197)	350	=40	—

EDP

55. During the year Monash University informed us that it would be advisable for us to change our program from the computer we were presently using for a number of very valid reasons. In view of this the Executive took the opportunity of investigating alterations. It seemed that we may have been able to use the computer of a mailing service — Data Mail. However, at the last moment the Company indicated that they were no longer interested. Because of this it was decided to convert to the Monash University's new computer and during this conversion steps have been taken to tidy up the programme in many areas. As yet the accounting package has not been implemented.

56. While in London I had the opportunity of watching the RSGB's in-house computer in action. On close questioning it was obvious that due to the smallness of our membership the ownership or leasing of our own computer would increase our EDP costs excessively. Further investigations proved this but it is certainly worth keeping an eye on future developments in the small computer field.

THE MAILING SERVICE

57. There have been some problems in this area mainly concerned with the insertion of material into "AR" destined for specific Divisions. Much needed improvements have taken place but alternatives are being investigated.

RECRUITING AND PUBLICITY

58. IARU Region 3 has received from the ARRL three colour films on Amateur Radio. The WIA has copied these films on to videotapes and already very good use of them has been made in NSW and Victoria.

59. As a result of the NSW Division's request for publicity material it was apparent to the Executive that in addition to hand-outs some colourful posters depicting various aspects of amateur radio would be very desirable. Several very suitable designs have been prepared for Executive and Institute approval and it is hoped to have a selection available in the near future. This would be the first step in preparing "Packaged displays" for loan to exhibitors.

60. An advertisement was placed in "CB Action" and it is obvious that there are many others who wish to know more about Amateur Radio. I anticipate that this Convention will spend some time in discussing this aspect of the WIA's activity.

61. Just prior to writing this report members of the Executive were involved in presenting a segment on Amateur Radio for the Channel 7 show "The week has seven days".

REPEATERS

62. A number of developments have taken place during the last year, all of which have been covered by the Federal Repeater Sub-Committee. One matter finalised was the additional channels for 2 metre FM Repeaters. Another matter which now appears to be nearing finalisation after protracted negotiations is the repeater licensing condition imposed by the Radio Frequency Management Division.

AMATEUR SATELLITES

63. During the year Bob Arnold VK3ZBR took over as Publicity Officer for the Project Australia Group to enable David Hull VK3ZDH to concentrate on his job of Satellite contact.

The launching of Amsat Oscar D, A08, in March has provided a satisfactory replacement for A06 which exceeded its design life by many times.

HQ BUILDING IN CANBERRA

64. The proposal as outlined at the last Convention was thought by a majority of Divisions to be premature particularly coming at a time when our major efforts have been centred on WARC 79. We were informed that the other National Organisations interested in the site were able to make a firm offer and thus that particular site was no longer available. However, it does not mean all the work has been wasted as the NCDC will no doubt make further sites available in the future.

65. Earlier this month I had the opportunity of discussing some amateur matters with the present Minister, Mr. Staley. He invited me to have further discussions with him in the near future.

RON WILKINSON AWARD

66. Our thanks to Mrs. Mary Wilkinson for her magnificent donation which has made this award possible. The conditions of the award were drawn up in close co-operation with her after Peter Wollenden and I visited her in Geelong.

MORE WORLD RECORDS

67. It is pleasing to see that Australia now hold the world records for the 70, 23 and 13 cm bands.

MEMBERSHIP STATISTICS

68. These are compiled, with adjustments, from the EDP data input from mid-December 1977 and P. and T. Department statistics as at 31/12/1977.

69. In conclusion I must mention the enormous volume of work handled during the year. There was scarcely any facet of amateur activity not thoroughly investigated and discussed during the course of the year fed by much useful information direct from interested members. Thank you.
D. A. WARDLAW, Federal President.

REMEMBRANCE DAY CONTEST 1978—RULES

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the names of those who made the supreme sacrifice and so perpetuate their memory throughout Amateur Radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, the winning Division will receive a suitably inscribed certificate.

OBJECTS

Amateurs in each VK call area will endeavour to contact other amateurs—

1. In other VK call areas, P29, and ZL on all bands 1.8 through 30 MHz.
2. In any VK call area (including their own), P29, and ZL on authorised bands above 52 MHz and as is indicated in rule 5.

CONTEST DATE

0800 hours GMT on Saturday, 12th August, 1978, to 0759 hours GMT on Sunday, 13th August, 1978.

All amateur stations are requested to observe 15 minutes silence before the commencement of the contest on Saturday afternoon. An appropriate broadcast will be relayed from all Divisional stations during this period.

RULES

1. There shall be 4 sections to the Contest —
 - (a) Transmitting Phone.
 - (b) Transmitting CW.
 - (c) Transmitting Open.
 - (d) Receiving Open.
2. All Australian Amateurs (VK call signs) may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members of the Wireless Institute of Australia are eligible for awards.
3. Amateurs may use these modes—
 - (a) Phone.
 - (b) CW.
 - (c) RTTY.
 - (d) TV (fast and slow scan).

However, only one entry may be submitted for sections (a) to (c) in rule 1. An open log

is one where points are claimed for more than one mode, AM, SSB and FM are grouped as one mode, i.e. Phone.

4. Cross mode operation is permitted but both stations may only claim points as for a phone/phone contact. Cross band operation is not permitted excepting via a satellite repeater.
5. SCORING CONTACTS:
 - (a) On the 3.5, 7 and 14 MHz bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each of these bands on Phone, CW, SSV and RTTY.
 - (b) On the 1.8, 21 and 28 MHz bands, a station in another call area may be contacted twice on each band using each mode provided that not less than 12 hours has elapsed since the previous contact on that band using that mode.
 - (c) Between 1600 hours GMT and 2100 hours GMT on Saturday, intra-call area contacts may be made on the 1.8, 7, 21 and 28 MHz bands once for each mode on each band.
 - (d) Between 0300 hours GMT and 0759 hours GMT on Sunday, intra-call area contacts may be made on 1.8, 21 and 28 MHz bands, once for each mode on each band.
 - (e) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in rule 3 at intervals of not less than two hours since the previous same band/mode

contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.

- (f) All CW/CW, SSV/SSV and RTTY/RTTY contacts count double. Note rule 4 re cross mode contacts.

6. Multi-operator stations are not permitted (except as in rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own call sign. Should two or more licensed operators wish to operate any particular station, each will be considered as a contestant and must submit a log under his own call sign.
7. Club stations may be operated by more than one operator, but only one operator may operate at any one time, i.e. no multi-transmissions. All operators must sign the declaration.
8. Entrants must operate within the terms of their licences.
9. CYPHERS. Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of 5 or 6 figures will be made up of the RS (phone) or RST (CW) reports plus 3 figures that will be incremented by one for each successive contact. If any contestant reaches 999, he will start again with 001.
10. ENTRIES: Must be set out as shown in the example, using one side of the paper only, and standard WIA log sheets if possible. Entries

must be clearly marked "Remembrance Day Contest" on the envelope, and must reach the Federal Contest Manager, WIA, c/o Orange and District Amateur Radio Society, Box 1065, Orange, N.S.W., 2800, in time for opening on Friday, 15th September, 1978. Early submission of logs will be appreciated.

11. **TERRESTRIAL REPEATERS:** Contacts via terrestrial repeaters are not permitted for scoring purposes. However, contacts may be arranged through the repeater and if successful on another frequency, that contact counts for scoring purposes.
12. **PORTABLE OPERATION.** Log scores of operators located outside their own call area will be credited to that call area in which operation takes place, e.g. VK5XY/2. His score is added to the VK2 scores.
13. All logs shall be set out as in the example shown, and in addition MUST carry a front sheet showing the following information:—
Name
Address
Section
Call sign
Claimed score
Number of contacts
Modes used
Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
Signed
Date.
All contacts made during the contest must be shown in the log submitted. If an invalid contact is made, it must be shown, but no score claimed. Entrants in the "Open" section must show the various mode contacts in numerical, i.e. chronological order.
14. The Federal Contest Manager has the right to disqualify any entrant who, during the contest, has not observed the regulations, or has consistently departed from the accepted code of operating ethics. The Federal Contest Manager also has the right to disallow any illegible, incomplete or incorrectly set up logs.
15. The ruling of the Federal Contest Manager of the WIA is final and no disputes will be entered into.

AWARDS (Sections a, b, c)

Certificates will be awarded to the top scoring stations in sections (a) to (c) of rule 1, in each call area, and will include the top scorer in each section of each call area operating exclusively on 52 MHz and above. Each VK, ZL and P29 call area will count as separate areas for awards. There will not be an outright winner. Further certificates may be issued at the discretion of the Federal Contest Manager.

The Division to which the Remembrance Day Trophy will be awarded shall be determined by the following formula:—

Average of top 6 logs plus (1000 times total points score from all entrants from call area in sections a, b and c of rule 1, divided by the total call area licences).

VK0 scores are added to VK7 and VK8 to VK5. Scores by VK9 stations are added to the mainland call area geographically nearest. Scores claimed by ZL and P29 stations are not included in the scores of any VK call area.

Acceptable logs for all sections shall show at least 5 valid contacts. The Trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

RECEIVING SECTION (Section d)

1. This section is open to all Short Wave Listeners in Australia, Papua New Guinea and New Zealand, but no active transmitting station may enter.
2. Contest times and logging of stations on each band are as for transmitting.
3. All logs shall be set out as in the example. It is not permissible to log a station calling "CQ". The detail shown in the example must be recorded.
4. Note the times and conditions set out in rule 5 (transmitting).
5. Club stations may enter this declaration. All operators must sign the declaration.

AWARDS (Section d)

Certificates will be awarded to the highest scorers in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager.

EXAMPLE OF TRANSMITTING LOG

Date/time GMT	Band	Mode	Call sign worked	RS(T) sent	RS(T) rec'd	Points
------------------	------	------	------------------	------------	-------------	--------

EXAMPLE OF RECEIVING LOG, VICTORIAN SWL

Date/Time GMT	Band MHz	Mode	Call sign heard	RS(T) sent	Station called	Points
0612	7	P	VK5PS	58002	VK6RIJ	2
0615	7	CW	ZL2AZ	559004	VK4KI	6
0618	14	P	VK0ZZ	57006	VK6FI	6
1620	28	P	VK3NAA	59077	VK3NZZ	1

SCORING TABLE FOR PHONE CONTACTS — ALL CW/CW, SSTV and RTTY CONTACTS COUNT DOUBLE (VK)

From	0	1	2	3	4	5	6	7	8	9	P29	ZL
VK0	—	6	6	6	6	6	6	6	6	6	6	6
VK1	6	—	2	3	3	3	4	3	4	5	5	3
VK2	6	2	—	2	2	3	4	3	4	5	5	3
VK3	6	3	2	—	3	2	4	2	5	5	5	3
VK4	6	3	2	3	—	3	5	5	2	4	2	4
VK5	6	3	3	2	3	—	2	3	3	5	5	4
VK6	6	4	4	4	5	2	—	3	2	5	5	5
VK7	6	3	3	2	5	3	3	—	5	5	5	3
VK8	6	4	4	5	2	3	2	5	—	2	2	4
VK9	6	5	5	5	4	5	5	2	—	5	4	4
P29	6	5	5	5	2	5	5	5	2	5	—	4
ZL	6	3	3	3	4	4	5	3	4	4	4	—

All intra-call area contacts on 52 MHz and above, or as indicated in Rules 5 (c), (d) and (e), are worth one point.

Magnificent SCOOP PURCHASE



Cat D-3210

The entire Australian stock of the famous Kenwood TR-2200 2 metre portable unit.

YES! The only 2m portable now on the market!

Never again available at this ridiculous low price.

Two years ago it was selling for \$199.50

Today's price is even lower!

\$189⁰⁰

20 only — BRAND NEW!

Now is your chance to buy a versatile portable at a never-to-be-repeated price.

DON'T MISS OUT!

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NEW! COMMUNICATION RECEIVER

MODEL C-6500

GREG WHITER
VK3CA

ANNOUNCING AN ALL BAND HF WADLEY LOOP COMMUNICATION RECEIVER FROM STANDARD RADIO, THE COMPANY WHOSE NAME HAS BEEN ASSOCIATED WITH HIGH QUALITY VHF AND UHF COMMUNICATION EQUIPMENT FOR YEARS.



A true state-of-the-art communication receiver covering a continuous 0.5 to 30 MHz frequency range.

Triple super heterodyne circuit with unique Wadley Loop System ensuring highly sensitive reception with exceptional stability over the entire frequency range.

Quartz crystal controlled oscillator allowing direct frequency reading down to 5 kHz divisions.

Two independent detectors separately provided for AM and SSB/CW reception. The automatic selective switching function offers low interference operations - 7 kHz (1-6 dB) band width for AM, and 4 kHz (1-6 dB) band width for SSB/CW.

Main dial with the large tuning knob covering 0 to 1,000 kHz; each one rotation of the knob covers 200 kHz.

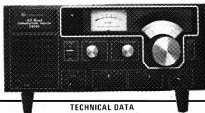
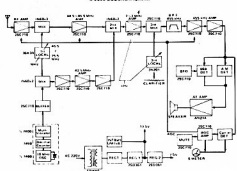
Antenna attenuator switch allowing prevention of overload by strong local transmissions.

Prefselector for improved image rejection.

Large Illuminated 5 meter.

ALL FOR JUST \$299.00 AT G.F.S.

C6500 BLOCK DIAGRAM



TECHNICAL DATA

Frequency range	: 0.5 MHz to 30 MHz continuous
Reception mode	: AM, SSB, and CW (USB or LSB)
Sensitivity	: 10 dB S+N/N
SSB	: 0.5 - 1.5 MHz 1.0 uV 1.5 - 30 MHz 0.5 uV
AM	: 0.5 - 1.5 MHz 5 uV 1.5 - 30 MHz 1.0 uV
(AM : 100% 30% modulation)	
Selectivity	: -6 dB 30 dB SSB 4 kHz 8 kHz AM 7 kHz 13 kHz
Stability	: Within 500 Hz after warming up
Output power	: 1.5W (with 10% distortion)
Antenna	: Attached whip antenna (1) and an external Antenna terminal
Power sources	: 8 dry batteries, external DC 12V, or AC 220V
Dimensions	: W280 mm x H156 mm x L340 mm
Weight	: 6.4 kg
Semiconductors	: 16 transistors, 3 ICs, and 30 diodes, 2 F.E.T.
Accessories	: A whip antenna, 3 auxiliary RCA plugs, a phone plug and 2 extension leads.

STOCKS EXPECTED MID JUNE.

THE ANSWER TO THE NOVICE'S DREAM AT A NOVICE'S PRICE

FT-7

FEATURES:

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- 30 to 10 metre operation.
- VFO controlled.
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- Ideal for the shack or the mobile at a price that you can afford.

Only \$548 including mobile mount, microphone and cables.



LOOK AT THESE PRICES AND COMPARE!!

FT 101E	160 10m x 260V TC	\$830
FT 301	160 10m x 200W	\$878
FT 301S	160 10m x 25W	\$648
FT 7	80 10m x 2W	\$548
T2 5205	160 10m x 1TC	\$859
FL 21008	80 10m	\$529
FL 110	160	\$235
FRG 7	1/2Hz Cumm Rn	\$325
VO 301	Series Monitor Scope	\$375
VO 100	1/1 Series Monitor Scope	\$263
YP 100	Dummy Load Wattmeter	\$ 87
FP 301	301 series 20Amp PS	\$163
FT 8010M	160 - 10m TC	\$1475

NEW PRODUCTS:

- BL 1A 5kW SWP 1.8 - 40 MHz, 1:1 Toroidal Balun.
- 50 - 75 Ohms
- Less 0.1 dB insertion loss.

Price: \$15.99

- A-2480 30/40/70 wire Trapped Dipole Antenna Complete with Wire, Insulators, and Traps.
- 18 metres long.
- 2 KW PEP rating.

Price: \$36.00

- RG 58/U Co-Axial Cable 45 c./metre

EMOTATORS ROTATORS

- MODEL 502CX Heavy duty.
- Rotation torque - 650 Kg/cm
- Brake torque - 4000 Kg/cm
- Only \$196.



- MODEL 1102MXX Extra Heavy Duty
- Rotation torque - 800 Kg/cm
- Brake torque - 10,000 Kg/cm

GFS Price only \$314

- MODEL 103LXX Medium duty.
- Rotation torque - 450 Kg/cm
- Brake torque - 1500 Kg/cm

GFS Price only \$145



MC-801

Sick of getting your head off at those rare DX stations while others are getting 5/3 reports from them? Then get with it!! The manufacturers state 14dB forward gain and 26dB front to back ratio.

SD 20	- 20 metre Swiss Quad	- \$255
SD 15	- 15 metre Swiss Quad	- \$137
SD 10	- 10 metre Swiss Quad	- \$128

HEAVY DUTY HF HELICAL WHIPS, 80-10 m.

Featuring: adjustable tip rods for ease of tuning, 6 feet in length, coil protected by heavy walled black plastic sheath, with fit any base having 3/8" x 24 TPI thread. So if you are looking for a mobile whip that will stand up when other fail look to our G80, G48, G20, G15, and G10 helicals.

ONLY \$229.00 each.

NEW COMBINATION FREQUENCY COUNTER AND SIGNAL GENERATOR - DX 5550

Featuring a 220 MHz counter upper limit and 30 MHz generator upper limit.

Generator frequency is read directly on the counter.

A MUST FOR EVERY HAM SHACK. \$212

DX 5550 same as DX 5550 but with 30MHz counter. Only \$175



DX 5550

Technical Data:

- 10Hz to 220MHz counter.
- 0.4 to 30 MHz generator.
- 600Hz tone oscillator.
- 2mcs and 200mcs gating time.
- 5 Digit LED display.
- Switchable KHz and MHz.

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K8-105 - \$113.

ACCESSORIES FROM GFS

- FS 301 HF in-line power and SWR meter. 3 ranges: 0.25, 200, 1000W - \$49
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- SWR 15 SWR fixed strength meter 3.5 to 150MHz - \$15.50
- SWR 2000 Ocker Block SWR POWER meter - \$99
- GTR 24 24 Hour Meter Clock - \$31
- SD F8 low loss double shielded foam dielectric Co-ax. 2 dB loss per 100 ft. at 100MHz. \$120 per metre.
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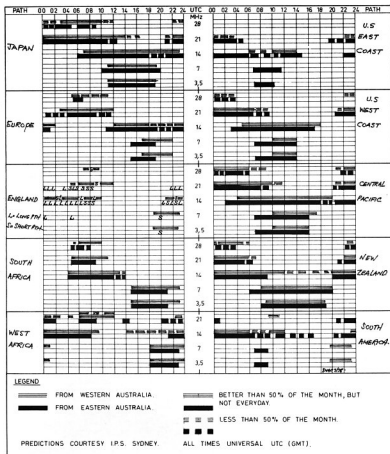
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IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



The good news — if you haven't already heard — is that the new cycle, cycle 21, will peak considerably higher than previously anticipated. The latest figures from Zurich suggest that August 1979 will see the smooth running number reach around 150, this being somewhat midway between the peak of 1958 (201) and 1968 (110.6).

Those who have been using the various HF bands will have noted the effects long before you have read this. Indeed those on 28 and 21 MHz have been having a ball and the 14 MHz band is often bursting at its seams. 28 MHz has virtually reached the levels of the early 1960s with world-wide DX being available for long periods predominantly over weekends.

Corresponding solar flux levels have peaked close to the 200 mark in April and May. The May mean setting around the 145, much higher than earlier predicted.

Sunspot numbers have risen considerably since August 1977 and in this year have shown 1/78 = 49.3, 2/78 = 69.8 (1-7th all over 100, 138 on 4th), 3/78 = 73.5 (103 on 4th), 4/78 = 94.7 (8-12 100 plus, 18-26 100 plus).

The running smoothed means for 7/77 = 28.8, 8/77 = 33.00, 9/77 = 38.5, 10/77 = 44.6.

Forward predictions at May 1, 1978, from Dr. Waldmeier are July 84, August 89, September 94, October 99, equating approximately the period 1967-68. Anyone remember? Solar flare activity has been moderate but the event on April 30th was the largest observed for

some four years and produced some interesting effects. I gather 6m produced some interesting DX about that time. We are now in the winter period and of course the band conditions assume different attitudes. As we approach August-September some interesting conditions should start to show.

Commencing in August the 6m enthusiasts should begin to take notice of 10m predictions for it will be along the periods of probable 10m openings that there are distinct possibilities of long haul 6m openings taking place. When I receive notice of the possibility I will make special note in the charts.

However, some detailed recording of solar terrestrial events should be attempted to anticipate periods of higher than normal conditions. I still maintain that the Solar Flux A indices given on WWW at the hour plus 18 minutes should be charted to observe relationships. A watchful ear on rising MUFs between 30-50 MHz could lead to the more observant types taking advantage of abnormal conditions leading to trans-Pacific DX on 50 MHz. Who will be the first in Southern Australia to make it to W/Ve or even South America.

At this late time I would like to make reference to a report that I mentioned some time back, of a theory for predicting the peak of the oncoming cycle, based on the "regression of recurrent geomagnetic activity recorded from the prior cycle to predict the sunspot maximum of the forthcoming cycle".

The method was devised by A. I. Ohl, a Soviet scientist. H. H. Sargent III, Space Environment Services Centre, Boulder, Colorado, modified the Ohl theory, thus enhancing the accuracy of the basic method devised by Ohl. Sargent modified Ohl's theory by taking into account finer time resolution and more accurate data than was available to Ohl. As modified, the theory provided accuracies of maximum sunspot level to within 1 per cent in some cases.

Compared to any prior known methods, the new method would be by far a major breakthrough in predicting sunspot maximum level, when accuracy and other advantages are considered.

The exact mechanism between the prior cycle recurrent geomagnetic behaviour and the succeeding cycle sunspot maximum is not clear. However, it is likely that one is directly related to the other in solar physics, whereby it is even possible that a new definition of a solar cycle may have to be established. Conjecture may place some possible validity in the theory the coronal holes that relate to recurrent geomagnetic disturbances may be the birthplaces of the succeeding cycle sunspot regions.

Monthly smoothed predicted numbers using the modified Ohl system for cycle 21:

	Jan.	Feb.	Mar.	Apr.	May	June
1978	58.5	64.4	69.5	75.0	80.6	85.1
1979	110.8	114.6	116.8	120.3	124.5	127.8
1980	151.5	153.4	151.4	152.0	153.6	152.2
1981	139.0	135.8	133.7	134.8	127.8	126.2

	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1978	89.5	93.6	97.6	99.7	103.3	107.1
1979	131.1	136.1	138.2	140.8	145.0	148.1
1980	150.9	149.8	146.2	145.4	143.7	141.2
1981	126.2	125.6	123.4	122.3	121.2	120.6

If these predictions hold true, cycle 21 will be a beaut and will likely parallel cycle 18 and have an impact almost as severe as cycle 19. During periods of high solar activity many services will be affected from Satellite down to AF. Probably sheer havoc in some areas. Now there is new evidence to support the theory that the weather is directly affected by solar sunspot behaviour and geomagnetic disturbances previously thought to be unrelated.

Specific features of the Ohl/Sargent work:
Predicted smoothed SS max for cycle 21—153.6.
Date of arrival — early 1980.

Prediction of smooth SS level maximum by method ratios — 158.0.

(This method takes the averaged smoothed odd cycle peaks divided by the average smoothed even cycle peaks times the peak of cycle 20.)

Accuracy of the Ohl/Sargent method as tested with observed data from cycle 20 and compared to cycle 20 sunspot peak level equals nearly 95 per cent.

Twelve hour periods with geomagnetic "A" indices of 100 or more expected in the next 10 years equals 81 periods (an "A" index of over 50 indicates a major geomagnetic storm).

Well, there's food for thought. The original writer of the article felt that the amateur community should be made aware of a highly accurate prediction that may well affect our use of the radio spectrum and also our daily lives and destiny.

I guess we can only observe these possible effects and perhaps enjoy what promises to be bumper crops of DX. Particularly the VHF fraternity.

Good luck, good DX.
VK3ZGP/NAC.

Acknowledgements: Swiss Federal Observatory, Zurich, M. Waldmeier, Radio Communication, May 1958, viz., O. Okleshen W9RX (RH Report).

**HEARD ANY GOOD
"RUMOURS" LATELY?
TELL A.R. ABOUT THEM**

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

12/5/78

The Editor,
Dear Sir,

With reference to the gentleman in AR (May 1978) from the electronics company.

"Sir", you are not the cheapest nor do you appear to be, in the very issue you get stuck into me.

Your FRG7 receiver is almost the dearest and in the issue the receiver varies in price from \$300 to \$350.

A phone call to the \$300 man will tell you he makes a comfortable profit at this price.

Turn off a few of your lights, mate, and pass it along to your customers. There is one letter in print supporting me and 36 here at home if you'd like to see them. And they're the ones who took the time to write. Your FL2100B's were advertised at the \$578 price after you got the agency and then mysteriously dropped. Maybe you didn't sell any?

The tone of the letters to me suggests that, whilst a man is free to make an honest profit, competition should force prices down if you wish to survive.

As for our prices being as low as the U.S. What can you buy a U.S. dollar for or for that matter what price the Japanese Yen?

I might suggest that when an FL2100B was \$400 to buy here it was \$325 air-freighted from Hong Kong, and you could buy Y160,000 for \$A400. Now the linear is \$578 and you buy Y100,000 for \$A400. So the poor hapless Ham pays 150,000 Yen for a linear which costs you less than 100,000 landed.

I challenge you to supply details of your landed cost and suggest that if you are paying what you say you are then you'd better buy from Hong Kong, because they are cheaper there than Japan.

How long are you going to accept the load of wallop that's being fed to you on the subject?

This is my final say. Let the buyer beware, you've only got yourself to blame if you get taken. To those who wrote me, thanks, I hope I was of some help but I find even one of the recommended businesses is a rip-off merchant, so watch out.

Yours faithfully,
Steve Gregory VK3QD

The Editor,
Dear Sir,

According to my calculations the G5RV with 100 feet top and 32.5 feet of open wire feeder has the following resonances — 2.83, 8.51, 14.17, 19.83 and 25.43 MHz. To be resonant on the present bands the feeders should be 16, 48, 32.5, 27 and 22 feet respectively. Perhaps the WARC 79 conference could go for some set of bands related according to the odd half wave lengths. If the feeders are made 49 feet long the antenna is resonant on 2.36, 7.09, 11.81, 16.53 and 21.27 MHz. The G5RV would be a most acceptable device if the bands were related this way.

Yours sincerely,
J. Kilchin VK6TU

The Editor,
Dear Sir,

I refer to your letter on page 37 of April 1978 AR headed DX column. I have read the letter several times and have come to the conclusion it would have been more correctly titled "Anti-DX column". Whereas I defend the right of the writer to do what he enjoys most on the bands, please don't decry those of us who enjoy the satisfaction

of getting a call and card from a rare DX station (near or distant) from the middle of a "dogpile" with 150W input using only a vertical or dipole on CW or SSB. I for one find great satisfaction in knowing that my operating technique, and sometimes patience, has won through over the 79 ft. beams and 1 KW linear amplifiers.

Some of the so-called "hull/goodbye" QSOs are necessarily short for the very reason that the station is rare DX and many stations wish to work him. The distant station may not speak much, or any, English, this also makes a relatively short contact necessary. I enjoy a chat myself and quite often "ragchew", but on the other hand, I also would find it a "Crushing Bore" if I was using Phone instead of CW.

Lastly, I quote from the letter "I never, or only very rarely, say that I will QSL", but how often does he say he won't QSL? There must be a lot of disappointed "Certificate Hunters" waiting for a card. Printed on a QSL card I received from KXSR are these words "The final courtesy of a QSO is a QSL"; that, I think, sums up my feelings exactly and if I have pricked anyone's conscience re QSLs — good — I intended to.

73 and "good DX".
Dusty.

45 Lahona Avenue,
East Bentleigh 3165
25-5-78.

The Editor,
Dear Sir,

I am a regular listener to the slow morse transmission put out by VK2BWI and VK3BWI but it has been getting harder and harder to copy it because of local (VK3) amateurs transmitting close to the frequency of the slow morse transmission and as one of the amateurs said that the people who listen on very broad receivers find it very hard to copy the morse, and the only way I can get practice is by listening to tapes which have been used over and over before.

Yours faithfully,
Warren Brown.

Box 40441,
Casuarina 5792
22-5-78

The Editor,
Dear Sir,

I enclose a copy of a letter sent to Senator Robertson, Kilpariff, and Mr. Calder, M.H.R.

Several letters of protest were given to Senator Robertson, who, I believe, will pursue the matter in Canberra this week.

T. J. Connell VK8CO
19th May, 1978

Senator E. A. Robertson,
41 Mitchell Street,
Darwin, N.T. 5790.

Dear Sir,

As a licensed amateur, I am writing concerning a situation which I consider to be preposterous. I am referring to the advertising and sale of amateur equipment to unlicensed persons, the majority of which are CB operators.

The two instances which prompt me to write are, firstly, the incident in Darwin this year of the sale of 15 Kenwood TS-820 transceivers to unlicensed persons. It is obvious that the majority of businessmen selling transmitting equipment are concerned more with the quick buck and not of the consequences. This I can understand. What is deplorable is that the situation exists where they can do it. Surely a simple solution is to limit the sale to licensed people capable of producing that licence and also to have the seller supply the name and address of the purchaser to the Radio Branch. This method is by no means perfect but is far better than nothing.

The second incident is the advertising of illegal equipment and the blatant advocacy to piracy The contraventions are:

1. Beams are not legal nor is working DX.
2. Linear amplifiers to boost signals.

Both these items are obviously intended for use with CB.

In this letter I shall restrict my concern to Amateur Radio and not deal with the possible

consequences to commercial services. I am concerned with the Citizens' Band because as this frequency is rendered unusable CBers inevitably turn to the next easiest thing which is amateur equipment (easily available) and amateur frequencies. It would be naive to suggest that this will not occur or is occurring.

Radio Inspectors appear to have their hands full with maintaining a clear commercial service and eliminating the worst of the CBers. Who will look after our frequencies? We have no power to.

The advertising of the 10 metre (28 MHz Amateur f.) transceiver as having "lots of channels!" inferring that this would be better than the crowded 27 MHz is absolutely astounding. Why not advertise skeleton keys for the X band or the X band of explosive has been tested on Y brand of safe and found to be effective. I feel it amounts to the same thing.

It is blatantly obvious to the outsider that some gentlemen, whether they be in P. and T. or the Government, care nothing about the whole situation. They are concerned with the fact that next elections whatever, different portfolios will be handed out and it will become someone else's problem. I sincerely hope that someone else sees the light soon.

Yours faithfully,
T. J. Connell VK8CO

18th May, 1978

The Editor,
Dear Sir,

One of the important functions of the Amateur Service SHOULD BE to present its image to the general public. One method could be to arrange displays of equipment used in Amateur Radio communications, publicity material such as pictures of Amateur activities, etc. It is quite difficult — and expensive — to obtain photographs for display purposes. Even in "Amateur Radio" we find cover photographs that appeal to the informed Amateur Operator but would hardly attract attention from the "outsider".

I suggest, therefore, that special thought should be given to the PR aspects. We need, I submit, photographs of Novice Stations and operators — NOT of the expensive, sophisticated types that have appeared as "typical" Novice stations, but simple, preferably HOME-MADE stations that will not frighten the possible devotee by their obviously high price tags. What about some gear fabricated from old TV chassis and components? There are still SOME radio enthusiasts who are severely limited by financial considerations and will have to improvise and construct.

Also, would it be possible to introduce a PR series of photographs that could be bought in sets by Radio Clubs and by individuals for material could have considerable value in our efforts to achieve "Amateur Radio for the Masses"? Anyway, I presume that the Federal WVA has some PR Officer who could advise on the best types of material to prepare. However, I think that Radio Clubs might make good use of prepared PR "kits" for display in Club premises and in PR situations "in the outside world".

Yours faithfully,
Rex C. Black VK2YA,
Education Officer
WVA NSW Education Service.

[This was one of a series of questions discussed at the 1978 Federal Convention in considerable detail. Executive even now are preparing display kits. Additional poster designs would be very welcome.—Ed.]

The Editor,
Dear Sir,

At the recent Federal Convention I learned that an earlier proposal to obtain an Amateur Low Frequency Band is now almost dead. Such a band would presumably be between 160 kHz and 190 kHz. Many amateurs may not appreciate the interesting technology and challenging communications paths that would result from the use of such a band.

In America, from where the main impetus for such a proposal must come, the objections to amateurs using such a band have been that it could interfere with the European LF broadcast

band, and the possibility of interference to various carriers used on high voltage lines by power supply authorities.

Both of these objections are probably unjustified, however I would like to suggest another approach to the problem.

I believe the band that was asked for was far too large. You might say the band asked for was only a few tens of kilohertz wide but, in a part of the spectrum the number of frequencies are few, it represents a very large slice. Obviously there is 1/100th of the spectrum space in the LF sector, i.e. between 30 and 300 kHz than there is in the HF sector between 3 and 30 MHz. In the LF part of the spectrum narrow band systems must be used.

Some say you should ask for more spectrum than you need, at least you might get some. Rubbish! If you ask for something you can't justify officials are bound to say "no".

The band that should have been asked for would be only a few kHz wide. What could one do with such a band? Plenty, narrow band systems are easy to achieve at such frequencies even with a crystal set. With CW or NBFSS telegraphic systems you could fit at least four stations into each kHz. Such a size band would be much easier to fit in between some existing service. Even the power authorities could keep their protection pilot carriers clear of the band until they were satisfied it would not cause interference.

Since the possibility of obtaining an LF band particularly appeals to myself I would be interested in hearing from anyone who may be interested in forming a lobby to obtain such a band.

J. A. Adcock VK3ACA.

QSP

21st JOTA

Have you completed your arrangements yet to help the Scouts and Guides for the 21st Jamboree on the Air? The dates are 21st and 22nd October, 1978.

AMATEUR RADIO WEEKEND

The WIA Education Service (incorporating the YRS) is organising a big amateur radio weekend at Katoomba in the Blue Mountains on July 28, 29 and 30 and October 20, 21 and 22.

If you are an amateur and you always wanted to meet that fellow in Broken Hill then why not invite him and his family to the big weekend and bring your family along, too. If you are studying for the August exam then why not come along for a two day brush up in Morse, theory and regs.

If you have just found out about this strange thing called amateur radio — then why not come along to the weekend — operate equipment, speak over the air waves under licensed supervision and find out more about it.

Amateurs, students, newcomers will all be helping each other and enjoying a great weekend.

The YRS hopes to organise further weekends one month prior to each exam.

The fun commences at 8 p.m. on Friday and concludes at 4 p.m. on Sunday at the St. Mary's Education Centre just near Katoomba railway station in the few hundred yards on the Sydney side of the Great Western Highway).

At the first weekend get together people from 8 to 70 years of age had a great time.

Bring along your Satellite gear, radio telescope stations, SSTV, etc., and encourage the new generation.

All accommodation and food for the weekend is available for just \$15. If you are bringing your family along then it's just \$15 for dad, \$10 for mum, and \$5 per kid.

All you do is phone Bill or Mildred Newton and tell them where you are coming and they will reserve food and rooms for you. Phone (02) 85 6321 or write to 44 Hillview Road, Eastwood, NSW.

Separate rooms are available or, if you want to get into those midnight pillow fights, dormitory accommodation is available.

AROUND THE TRADE

DICK SMITH ELECTRONICS 1978 CATALOGUE

This year is Dick Smith Electronics' 10th Anniversary. In keeping with his "think big" philosophy, Dick has produced a monster 100 page catalogue of items sold in his eight electronics enthusiasts' stores.

It lists and gives prices for nearly 3,000 items with many of them illustrated and described. There is also an eight-page data section, full of semiconductor specs and base connections, data for amateurs and CBers, useful circuits and component colour codes.

The Dick Smith 1978 catalogue is priced at 75 cents at all Dick Smith Stores and Dealers or by mail order from Box 747, Crows Nest, 2055.

DAIWA RELEASES NEW ANTENNA RELAYS

Daiwa Corporation of Japan have released a range of antenna changeover relays to complement a long list of high quality Amateur Radio accessories.

Two models are available, one covering 1.5 to 170 MHz and the other 1.8 through 450 MHz, with maximum power rating 100W PEP and 200W PEP respectively.

Both units offer extremely low insertion loss and are properly matched for 50 ohms antenna impedance.

The remote coax switches are controlled from a DC source of 10-15 volts.

The Daiwa antenna relays are available through the Australian distributors, Vicom International Pty. Limited, 68 Eastern Road, South Melbourne 3205, telephone 699 8700.

NEW ANTENNA COMPANY IN QUEENSLAND

The Scalar Group is pleased to announce the commencement of a sales office and factory in Queensland.

A new company, Scalar (Qld) Pty. Ltd., has been incorporated to provide the Queensland communication industry with local access to the complete range of the Scalar Group's products.

Design and manufacture has commenced in Brisbane of many of the antenna product lines which were formerly manufactured in Melbourne for the Queensland communication market. It is the intention of the company to manufacture antennas for Queensland in Queensland and also as a back-up technical and manufacturing facility for its N.S.W. outlets, providing a technical consultative service, improving delivery schedules and minimising freight costs.

The company is under the management of Mr. Brian Robinson, whilst Mr. Terry O'Meara, Technical Manager, is in charge of the design and manufacturing facility.

AMERICAN ELECTRONIC LABORATORIES

AEL 2 TO 40 GHz ANTENNA

American Electronic Laboratories, Inc. (AEL) presents its model ASO-1601A cavity-backed spiral antenna. It provides 2 to 40 GHz coverage (in a single antenna). It is useable in airborne amplitude-comparison direction finding systems as a broad-band dish feed, or in any application requiring extremely broad frequency coverage from a single antenna. The model ASO-1601A is qualified for use in severe airborne environments and meets, or exceeds, the requirements of MIL-E-6400.

This antenna provides an essentially constant circularly-polarized beam over the entire frequency range. Polarization is LHCP (model ASO-1601AA is RHCP). Three dB beamwidth is 90 degrees \pm 20 degrees from 2 to 4 GHz; 75 degrees \pm 15 degrees from 4 to 30 GHz; 65 degrees \pm 15 degrees from 30 to 40 GHz. The axial ratio is 1 dB nominal, 2 dB maximum from 2 to 25 GHz and 2 dB nominal, 4 dB maximum from 25 to 40 GHz. Power handling is 1W CW.

Weighing only 4 ounces, AEL's ASO-1601A antenna is 2.5 in. in diameter and 2.0 in. deep.

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SPECIFICATION

Input frequency ranges	: 432-434 MHz (low) : 434-436 MHz (high)	Maximum frequency error at 432 MHz	: ± 5 KHz
I.F. output frequency	: 28-30 MHz or 144-146 MHz	R.F. connectors	: 50 OHM BNC
Typical gain	: 30dB	D.C. Power requirements	: 11-13.8 volts 12.5V nominal
Noise figure	: 3dB Maximum	Current consumption	: 50 mA Maximum
Oscillator frequencies	: 101 MHz (low range)	Size	: 110 x 60 x 31 mm
	: 101.5 MHz (high range)	Weight	: 260g
	: 96 MHz (low range)		
	: 96.666 MHz (high range)		

DESCRIPTION

This 432 MHz converter is intended for use with either a 28-30 MHz or 144-146 MHz receiver to produce a high reliability receive capability for satellite or terrestrial communication.

The unit has two ranges, 432-434 MHz and 434-436 MHz, both for the same I.F. output frequency, which may be selected by means of a toggle switch mounted on one end of the diecast case. The second range (high) has been included to allow reception of satellite signals normally transmitted above 434 MHz.

Incoming 432-434 MHz and 434-436 MHz signals are fed to the first R.F. amplifier, which uses a BFR34a low noise silicon transistor. This signal is further amplified by a BFY90 transistor, before being passed to gate 1 of the 3N204 dual-gate MOSFET mixer. The local oscillator signal, 404 MHz or 406 MHz, is applied to gate 2 of this mixer, to produce the required intermediate frequency. The use of printed strip-line techniques together with an ultra low-noise first R.F. stage, produce a selective receive converter with an overall system noise figure of less than 3-0dB.

The zener diode controlled crystal oscillator uses high-stability 5th overtone quartz crystals which provide a high degree of accuracy and stability for the converter. The output from this oscillator is fed into a doubler stage, to produce 202 MHz or 203 MHz, which in turn is fed into the final multiplier stage to produce the local oscillator injection of 404 MHz or 406 MHz.

The converter is housed in a highly durable black diecast case, and all circuitry is constructed on high quality glass-fibre printed circuit board.

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.

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SPECIFICATIONS MMT432/144S

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Frequency Coverage	: 432 - 434 MHz. Low Range
	: 434 - 436 MHz. High Range (Oscar)
Selectable Offset	: 2 MHz.
Input Frequency Range	: 144 - 146 MHz
DC Power Requirements	: 11 - 13.8 volts, 12.5 volts nominal
Current Consumption	: 2.1 amps peak
RF connectors	: 50 Ohm BNC Sockets
Power Connector	: 5 pin DIN Socket
Size	: 187 x 120 x 53mm
Weight	: 900 grams

RECEIVE SECTION

Converter gain through transceive port	: 10 dB typical
Converter gain through independent port	: 25 dB typical
Overall converter noise figure	: 3dB maximum
Input impedance	: 50 Ohm
IF output impedance	: 50 Ohm

TRANSMIT SECTION

Input impedance	: 50 Ohm
Input modes	: SSB, FM, AM or CW
Input drive for full output	: 10 watts or ½ watt via selectable attenuator
Power Output	: 10 watts continuous rating
Output impedance	: 50 Ohm
Relative 404/406 Mhz output	: Better than — 65dB
Other spurious outputs	: Better than — 65dB
Quiescent transmit current	: 250mA.

LOCAL OSCILLATOR

Maximum frequency error at 432 MHz	: ± 5KHz
Typical drift at 432 MHz	: 2 KHz/Hour
Frequency sensitivity (11 - 13.8 volts)	: 50 Hz
Oscillator frequency 432 - 434 MHz	: 101 MHz
Oscillator frequency 434 - 436 MHz	: 101.5 MHz
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AMATEUR BAND BEACONS

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VK1	VK1RTA, Canberra	144.475
VK2	VK2W5, Sydney	52.450
	VK2W5, Sydney	144.910
VK2	VK2RHR, Milingong	144.120
VK3	VK3RTR, Vermont	144.700
VK4	VK4RTR, Townsville	52.440
	VK3RTR, Mt. Mowbellan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofly	53.00
	VK5VF, Mount Lofly	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Melbourne	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RXT, Ulverstone	144.900
	VK7RXT, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG8	KG8JDX, Guan	50.110
KH6	KH6EQI, Hawaii	50.110
TI	TI2NA, Costa Rica	50.080
W	WA6JRA, Los Angeles, USA	50.101
ZL1	ZL1VHF, Auckland	145.090
	ZL1VHW, Waikeato	145.150
ZL2	ZL2VHP, Palmerston North	52.500
	ZL2VHP, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

There are no changes to the beacons list this month, but the continuing inclusion of the overseas beacons is necessary due to the rising sunspot cycle and the likelihood of those beacons not yet heard in Australia will soon be heard. There is every chance of long haul 6 metre DX during June and July for the winter peak followed again by an even better chance of some rare contacts during September/October with the equinoxial changes.

What does seem a pity to me is the little advantage taken of the potential for eastern State amateurs in VK2 and VK3 to work across to New Zealand, particularly on 144 MHz. The all water path which exists between large areas of the two states and ZL must be open quite often but seems to lack any specific co-ordination from either end to achieve anything. There are beacons in both countries, and the fact that west-east paths exist along the southern areas of Australia which are exploited fairly regularly between Albany and Adelaide and Melbourne and Auckland indicates similar paths exist between VK2 and ZL at least, on 144 and 432 MHz!

Are the amateurs on both sides of the Tasman totally uninterested in one another? I have been told the antenna systems of some ZL beacons are in the directional line rather than uni-directional, i.e. signals are beamed more or less to defined areas rather than in all directions; if this is so it would tend to indicate favouring north-south paths which exclude Australia. One wonders what amateurs on both sides of the Tasman are really doing to protect at least 144 and 432 MHz etc. from the impending WARC 1979 coming up? The Queensland boys only needed convincing they could work up and down the coast on 2 metres — after being suitably convinced they now do that, over areas previously not thought possible, and they will eventually work the 1000 mile path from north to south, i.e. Townsville to Brisbane, etc. I would like to take a lot of convincing. It cannot be done with some regularity between VK2 and ZL if people were interested enough to make the effort, and I am sure that is all it requires, the effort!

I also read complaints in "ORM" on how difficult it is for anyone in VK7 to have contacts with

2 metre stations in Melbourne, the beacon can be heard regularly but no one seems to want to work south. Robert VK3AUR in the Grampians area also complains of no contacts into Melbourne and adjacent areas. Even the halfway house at Mt. Gambier doesn't seem to be flooded with contacts from Melbourne or Adelaide either for that matter. With Melbourne a Channel O area one would think 2 metre activity would boom, but perhaps it is more of interest to work through the repeaters. Surely there must be many circumstances where a contact could be established via a repeater and then switched to SSB on the low end of 2 metres. I note Robert VK3AUR calls most nights on 144.1 beamed to Melbourne at about 2000 hours local time. Here in VK5 the Channel 7 repeater on Mt. William is regularly monitored to warn of impending openings to VK3 — later on I suppose we will be able to monitor Channel 5A from the same area, but with no one to work!

Having got the means out of the way, on to more interesting thing during the month I received a letter from Bob K6RNO, Box 167, Somerset, California, 95584, USA, and he supports the efforts being made here for the use of 50 to 52 MHz. He goes on to say "Contrary to previous predictions this present sunspot cycle is supposed to reach a peak smoothed number of 150 in April 1980, making it the second greatest sunspot maximum in recorded history, the greatest being 1958-59. It would be a tragedy if VK/ZL were not permitted the use of the lower 2 MHz of the 6 metre band, much could be added to the knowledge of VHF propagation if VK and ZL were permitted to use the part of the 50 MHz band that is useable to other VHF enthusiasts around the world. Let's face it, it's just not practicable to try to tune over 2 MHz listening for weak signals.

"I was very active on 6 metres during 1958-59 as a member of IGY and IGC-59, during this time I worked many IGs, frequently on a day basis on MHz. For some reason VK is a very difficult path on 50 MHz and I recall the end of the summer of 1959, ZL openings there were only 3 openings to VK I know of, and 2 of these were to VK4, during which I worked VK4XJ on CW, the other was a very marginal opening to VK2 and had a partial contact with VK2ZAO. Also at one time I heard VK3RO or VK3EG testing, but being so long ago I forget which it was. However, the end of the year moved up to 51 MHz we had only one opening to ZL from WE, the MUF apparently dropping off quite sharply. No VKs of course.

"During the 1958-59 sunspot maxima, if the ZL/VK authorities had not dragged their feet in granting 50 MHz authorization, I am sure ZL and VK contacts could have been made as early as 1957, due to the number of backscatter openings from that direction at that time.

"I do have both transmitting and receiving capability on 52 to 52.50 in the worst case, but do hope you guys will get 50 MHz authorization." (Thanks for writing, Bob, we live in hopes here of course for some consideration...SLP.)

FROM DARWIN

Graham VK8GB writes again with a very newsworthy month-watering contact from the Darwin area on six and two metres. If you have been keeping a chronological note of Graham's activities, then this follows on exactly, starting with 10th April: 6 metres 1010 to 1330Z, JA2, JA6, JA7, HLW9 and KG6JDX for 7 contacts. On two metres: 1107 to 1800Z, 26 contacts all to JA4 and JA6 areas. Additionally, on six metres, KH6EQI heard and JAB2ZY reported KH6EQI 0500 to 0730Z and FK8AB 0400 to 0452Z on 52.064 MHz 11:11; 12:4; 6 metres 0330Z WABGUB/KH6 0332Z KH6IAA, 1250Z KG6JDX. Same day, Brian KBVNV worked 25 JAs on two metres in JA4, 5 and 6. George P29HV hearing JA low band TV. KG6DX worked KH6EQI 5 p.m. 0400Z, six metres, VK3OT (SSB) and Rosa VK4RO, VK4RO worked WABGUB/KH6 also.

13-4: Six metres open but no contacts. Two metres 1135 to 1155Z JAH1, JA4UJ, J6RHH, J6HEUK and JHCTY. 14-1: Six metres, KH6EQI heard, 1033 to 1300Z JA4FFU, JA4MBM, HLW9, JAB2ZY, KG6JH and JH6TEW. On 2 metres 23 contacts between 1058 and 1205Z to JA4, 4 and 6 areas as usual, but in addition JF3IGZ, which is the first time Graham has mentioned a 3 area on two metres. JA4MBM reported that 13-4 the following were heard in Japan: KH6EQI, KH6HI,

YB8KM, Y8ZV, FK8AB, KG6, P29, VK2, 3, 4, 5, 6, 7 and B. Very good conditions and a very long opening. KGE open very late at night and the low end of six was like 20 metres!

15-4: 1013Z JF3H1, 1330Z JH6GVX, 1302Z JA2JUV, 1303Z JA2BZY, Brian KBVNV reported no signals on 2 metres this date, but after afternoon opening on six. JA2BZY reported KH6HI at 0936Z and VK7DA 0700 to 0800Z. 16-4: Six metres: 0213Z KH6IAA, 0229 KH6HI, 0400 KH6J51, 0630 WABGUB/KH6, 0700 JAB2ZY, 0709 JAH6A, 0814 KG6JDX, KG6DY, 1255 JA1W5, 1337 JH6FMA, 1358 JH6TEW, 140 HLSTG. (In other words, six metres open to somewhere within 10 hours—SLP.) On 2 metres 1117 to 1213Z JA5 and 6 for 9 contacts. Information received from KH6IAA: He worked on 15/4 into JA via backscatter, reported 302CM working JA5 also, and he worked four stations and one CE stations 0130 to 0300Z on 15-4. On 14-4 at 0200Z KH6HI and WABGUB/KH6 worked KZ3NN in the Panama Canal Zone!

"From KH6HI: Open to South America today (15-4) but only weak CW. F080R will be back on six in August; WBBKAP now K6FV has info on ZK1. KH6HI worked YJ8 0730Z on 13-4. From KH6J51: Worked YJ8 and two P29s on 8-4, XE1GE Mexico active on six. From JAZDNN: VK3, 4, 5 and 6 into JA on 15-4. From KG6JDX: YJ8 working JA on 13-4, C21TA reported active on 52.50. From JH6TEW: 0800 to 1000Z KH6 on 15-4, worked VKS and KH491M; KP9NT/DU2 working JA1; P29 to JA in evening."

17-4: On six metres heard KH6EQI, 1025 to 1349Z worked JA1, 2, 3, 4, 5, 6, 7, 8, 9 and 0 as well as P29ZNL. On two metres: 1105 to 1157Z 10 stations in JA4 and 6 districts. Message from JAB2ZY: 0936Z 15-4 worked KH6EQI on CW. 04015 15-4 worked VK3OT and many VK6 stations in Perth and 0705Z JAZDNN worked FK8AB 0450Z on 52.015. From JAZDNN: A2 worked on Es today, X60DX full scale on meter at 0000Z. Heard VK5LP 5 X 2 and worked VK5KK 0730Z 16-4, also VK3OT. HSTEW heard VK4 and YJ8KM today. From Brian KBVNV: Worked KH6IAA, WABGUB/KH6, KH6EQI and KH6J51 on 15-4. On 16-4 worked P29ZNL mentioned at the start of paragraph was notable in that it was Graham's (VK5GB) first F2 contact with P29 for many years. Dick is located at Madang and runs 20 watts to 5 elements.

18-4: No signals. 19-4: Six metres 1027Z JAPSD0, 1028 JABQVC, 20-4: Heard KH6EQI, Six metres: 1213 to 1305Z JA2, 3 and 6 for 7 contacts. From JABQZB: Worked VK4 at 0730Z. From VK6GF: He (Steve ex-VK6ZBW) has observed 7 or 8 JA openings this year. Worked 16 stations on 16-4 and 31 on 18-4. VK6ZBY heard KBVNV on two metres on 17-4 via F2 Brian had his CW ident running with his beams (10/10) looking north. Time about 1800 local (Perth) time, and signal weak with GSB and flutter. We can't explain how the signal propagated!

21-4: Six metres 1027 to 1230Z 17 stations in JA, HL and KG6 areas. Two metres: 1112 to 1139Z JA4, 5 and 6 for 10 contacts. From KG6JDX: ZL TV into KGB today on 50.740, 50.750 and 50.820 MHz. Six metres: 1013Z worked KH6EQI and VK1ZAR working JAs at 1040Z. 23-4: Six metres, heard KH6EQI, 1032 to 1255Z, KG6JH, KG6DX and JH6TEW. Two metres: 1103 to 1218Z 11 contacts JA4 and 6 areas. From KG6JH: Into VK4 again. Thought he heard a VK7 on CW. KH6HI reports J01YAA on 50.110 is on again from Marcus Island, 24-4: Six metres 3025 to 1033Z JA2, 3, 4, 5 and 0 for 11 contacts, this an afternoon type opening. 25-4: Six metres, 0300Z KH6J51, KH6IAA, 1140Z HLW9, On 16-4 A1 KH6IAA worked four VK2s and P29. 28-4: Six metres, heard KH6EQI, 1020 to 1305Z JA2 and 3 for 5 contacts. JAs heard on two metres but none worked. From JAB2ZY: Worked 3025 to 1033Z JA2, 3, 4, 5 and 0700Z 5 X 9 + 27, 24 Six metres, 0815Z JR3PEU, 0828 JH4SSP, 0835 JF3DYA, 1040 KG6JH, 1945 KG6JDX, 1407 JF3JNY, 1503 JR1MLZ, 1312 JH4NTN/1, JL1NDP and 1318 JF3JLY, five hours of openings. On two metres: 1255 JAB6BH, KG6JH reports working JA on 28-4 and heard ZL TV on 24-4, 28-4. No signals.

29-4: Six metres, 0420Z KH6IAA, VK4MS reports very good JA opening 28-4, and has heard KH6EQI 18 days in a row! 30-4: Six metres, 1010 to 1310Z, 15 contacts, JA4, HL and KG6. Two metres: 1238Z, JH6IFF. KG6s all worked C8JAU on 30-4 at

5 x 9W1-15: 1049 to 1306Z, JA1, 2, 3, 4, 5 and 6, HL9W, for 27 contacts. Graham, Brian KBVVV worked JA5RNN 1120Z. YAKRM being worked by JA 0915Z. CRBAJ DXpedition worked 500 JA stations. YAKRM last in JA1, 2, 3, 4, 5. Brian advises the FM signal on 49.305 heard regularly is in fact an FM link between HKA studios in Seoul and their transmitters at Incheon-125. No signals. 3-5: Six metres, 1030Z JA2HMO, 1037 J7AFK. Six still open at 1402Z. HL9W worked V56HK. JA2HMO reports VK4 and VK6 (Perth) worked in today. 4-5: Six metres, 1045Z JA1, 2, 3, 4, 5. Brian KBVVV worked two metres to JA for 26 minutes to J44 and JA6. 5-5: Brian KBVVV worked 1130 to 1430Z on six to HL9W, J44, JA7, PA2, JA3, and on two metres to JA4 and JA6 around 1225Z.

6-5: Six metres, 1021 to 1039Z J2RQZ, J2J3CV, JA3VXH and J4ALHR. 8-5: Six metres, 1020 to 1215Z 12 contacts to JA, P29 and KG6. Two metres: 1155 JHTEW, JA1202Z J4OPHF, KGJHJ advised J21APC, J21ADAP active on Bonin Island. Worked VK4RO at 0830 his time! Working Es into JA. P29 NOW HAS 50 to 54 MHz!! Bruce P29BB is located at Yonki Village near Kainantu, between Goroka and Lae, and runs a TV506 to a ground plane. JABZY advises WA4TNV/KLT Shyma Island has been worked via Es on 4.5-5.5. JABZY advised 0730Z KHABG/KH8, KH8AL, 1045 to 1109 PAAMB, JAQVCY, JH7VYN, JA1ETO and J2R1XZ. KH8AL advises big two metre tropo opening from Hilo (Hawaii) to San Diego (California) today and still on while working on six. Most contacts via the repeater on Hilo 146.220/146.820, but at 1405Z it switches to 146.220/146.820 on 7000 feet and a five element beam on 145.100! All also worked three W6 stations on backscatter on 8-5 but no Es opening to W as yet.

10-5: Six metres, 1100Z to 1155Z KG6JHJ, JH5EYL and JH2NUU. Two metres: 1210Z J4HPQ on SSB and CW. There is a commercial RTTY station in JA on 146.800 which gives a good indication of two metre conditions. 11-5: Nil signals. Lyn VK4ALM advises he has worked 560 JAs on six since February, also KH6, KG6, HL9W and HGTG and believes HIMTU is also active. The CR9 DXpedition left their TS600 in Macao for local operation. 12-5: Six metres, heard KH6EQI, 1000 to 1040Z; 10 contacts JA1, 2, 3 and 8. JHTEW advises Es between JA6 and JA7 today. Hal VK4DO has worked 924 JAs since February. KG6DX reports a new call sign in six and might be KG6JSC and that maybe KX6 is also six now. JH2VHL reported today he heard V56FX, HMTJE(7), KG6JHJ, VK4, VK6 and JDI, 14-5: Six metres, heard KH6EQI, 1005 to 1053Z worked 9 JAs in 1, 2, 3 and 7 districts. JABZY worked HL9W and HL9TG and heard V56BE calling VK at 0400Z. JFDWQ rumours that KG6R, Saipan is on six and also KX6. 15-5: Six metres, 0950 to 1025Z, JA1, 2, 3, 4, 7, 9 and 8J9ITU (A99).

Graham makes some final comments: "I think we have seen the last of the JA-VK two metre contacts for a while but six looks like holding on with afternoon openings for a period yet. It would appear the skip doesn't favour JA at night as we get strong TV on 49.75 well into the evening but no amateur signals. If you like statistics here are a few about my contacts on VHF since coming back from my holiday."

"Six metres: 580 contacts in 16 openings to JA. 58 contacts in 33 openings to KG6. 33 contacts in 16 openings to KH6. 15 contacts in 14 openings to HL9. P29ZNL and P29BB. Also VK4RR on backscatter."

"Two metres: 359 contacts in 31 openings to JA."

"The openings are when I personally contacted a station and do not include days when KBVVV contacted areas when I didn't, nor days when I heard signals only."

My grateful thanks to you, Graham, for the trouble you have taken to keep the rest of the country informed of your activities, to prepare the reports you have for so many weeks speak highly of you and the Australian amateur community should be grateful to you and Brian for putting Australia on the map on both six and two metres. At least there are many more areas who are now aware of where we are, but we still face that ever present difficulty of a JA in contact in prime operating frequency."

I repeat what I have said many times before, we surely miss out on many contacts for no other

reason than we are two megahertz higher in our operating band, two MHz higher which means poorer antennae, poorer equipment coverage and operation, poorer liaison with other areas, and it is a most frustrating experience. Now with the report which has just come to hand that P29 have been granted the full 4 MHz from 50 to 54 MHz, it's even more frustrating. It would be interesting to note what the position might be if we could speak with the massive voice as the Citizens' Band operators have done, and what they have achieved in the small time they have been around - on for a hundred thousand extra amateur voices!

Referring back to Graham VK6BG and his reports once again, I make no apologies for using up a fair bit of space for some months with his information. I believe it is interesting to most who read the pages, it's fresh, new, and being presented in chronological form I know those who study these things are getting the total information. So much is happening to the north of us that if nothing else, the total reports of Graham's information keeps a few of the dedicated operators in the south and other areas on their toes, and in the future will surely ensure more contacts are made, allowing for the 2 MHz differential!

Tony VK6BV in Kalgoorlie has written and quotes a small paragraph from the WA VHF Group Bulletin: "It is interesting to note that the RSSGB is keen to try and establish a new (to the UK) Amateur Band in the region of 50 MHz and proposals to this effect will be put to the IARU Region 1 Conference due to be held this month. If they manage to pull it off (fingers crossed) who's for 6 metre long haul DX?"

Good luck to the boys in UK, they must be really out on a limb with their 70 MHz band. Tony also writes to advise of various 6 metre openings to Kalgoorlie, namely: 14-4: 1405Z JA1 only, 53 active, 5 stations. Also heard 146Z2FQ Koolan Island on backscatter, 19-4: J44PFU very weak and short opening. Peaked to S2 for 30 seconds, time 0630Z. 20-4: 0610 to 0705, JA1, 2, 3 and 4 areas, 5S average, peak 57, 13 stations. 25-4: 0642 to 0756Z and 0652 to 0900Z, JA1, 2, 3 and 4, 56 contacts, 2 and 23 stations. JA1 also worked VK4, 16-4 and 22-4: Weak but audible JA signals on 50 MHz. No response from calls on 52 MHz. Time 0630. (That's that 2 MHz difference again!) 27-4: 0600 to 0713Z, JA1, 4 and 9, plus 0, 53 average peaking 58, 8 stations. 29-4: 0719 to 0741, JA1, 2, 3 and 53 peaking 55. 3-5: 0630Z, 2 and 23 stations. JA1, 2, 3 and 9, 84 peaking 58, 12 stations. Could still hear JA's on 50 MHz section at 0900 but nothing on 52 MHz."

Steve VK3OT writes to say on 12-4 he heard HMX2GJ who runs a full output! KG6DX-VK3OT equipment both ends FTV650B into 6 element jaggy 50 watts - this being the first genuine KG6 to VK3 two way. Steve worked JA1 and 5, one each, 16-4: 0530 to 0700Z all JA areas except JA8. Second opening 12-4: 0530 to 0700Z, on 52.050 and 50.110. Some JAs reporting all States on 12-4 except VK7 - Steve wonders where you are."

Steve also writes: "A letter via JA1PAC shows photos of Khabarovsk Radio Club in Eastern Siberia, depicting transmitter used to send signals to VK in 1976. All valves with the final a type 829B would you believe! Power supply uses mercury arc rectifiers of some sort with about 1000 volts on anode. Rig looks very neat at front especially the Russian wiring and receiver. Antenna 4, 4 element quad type with upper and lower sections fed actively. Antenna was rotated atop a very high building. Their HF rig shows a single 814 valve with pi output for 10 metres, also about 200 watts."

"The six metre rig appears to operate on several modes, FM, CW, etc., and looks very much like any homebrew transmitter from the late sixties. The 829B socket was a ceramic type no doubt from the Russian type 522 fitted to Allied tanks during the Second World War. Notice of equipment in the photos shows a solid state power supply. Bandswitching is shown for 144 MHz and smaller coils. F max. shown as 220 MHz."

"Total score this season were 157 QSOs with Japan. \$5.11 airmail to JARL OSL Bureau. All JA districts worked plus KG6. Missed were HL9 and DU0WPX. That's all from Western Victoria except would anyone be interested in joining in the purchase of a FTV650B for VR4DZ and future DX

locations? One is available at about \$170, that's \$9 at 20 people, \$5 if 25 ship in. How about it? SMRKR have a rig for anyone to use and borrow to go DX. VR4DZ wants to buy a rig and sell it at the end of his term 9-78. If anyone wants to be put on a list which will make 25 people then please drop me a line." Thanks for writing, Steve, and the venture with the FTV650B looks reasonable, so hope you receive some support to get the thing under way soon.

Robert VK3AUR writes from Halls Gap in the Grampians with some news from an area which for some reason has not been mentioned in my signal into my QTH than on 2 metres. Rob says: "The guys in Mildura are active, and enthusiastic. Noel VK3AUG has a 14 over KLM which lifts over for vertical, and aims a signal down here consistently. Ray VK3BRB also active again, although a few dB down on Noel, but still good. Keith 0632Z new to the band, is also workable. The Mildura boys do not have good operating paths to anywhere, but look towards Melbourne and Adelaide most nights from 2000 EST."

"I arranged with Alan VK4ZRF to take part in meteor scatter checks during the predicted showers for 4-5-78 to 5-5-78 and built a rhombic pointed at him with slight-levations (25 degrees). However, the test contacts could be continued due to the arrival of first harmonic on 4-5-78. Sorry, I left!"

"I have not received confirmation of my contacts with KH6HI and KH6EQI yet, but live in hopes. Details are as follows: 4-78: Maintaining listening watch on 50.104 I heard KH6EQI beacon rise up out of the noise at 0635Z peaking to 5 x 5. Finally at 0713Z I received acknowledgement. KH6HI called me on SSB and reports were exchanged. Signals faded on phone so back to CW. It was touch and go. A very fast CW station it also audible on the tape and it appears it could be LU... L or similar. Having difficulty in confirming."

Congratulations to you, Robert, for your efforts with these two stations, and for their co-operation in working you. Robert's tape has been examined by me and the contacts made, also the very fast CW station was the novel one. Eventually we may all be able to learn the station's call if it can be deciphered."

Robert also had a ball on 11-4-78 when he worked into a mass of JA stations for three hours. Worked all call areas. Along with others, he's not very happy at the prospect of a Channel SA 100 KW TV station at Mt. Dundas, near Hamilton. Neither is anyone else, and I can see it's use being more widespread, thanks to the establishment of FM.

Two metres has been rather quiet along the southern coasts this past couple of months, but June/July might see some improvement. I hear on the grapevine from time to time about someone somewhere working something worth while, but I am rather careful about writing too much from what could be considered hearsay, so until you state otherwise, I prevail. We certainly have liked to receive some information on what has been going on along the north Queensland coast during the period since February, when so much has been worked in Darwin - we all know from cross-information much has been worked but some details would be really appreciated from time to time."

I draw your attention to the new Australian record set for the 50 MHz band and recorded in the separate box in the column. Congratulations to Stan VK4ZSH and Nev VK4ZNC for their efforts in extending the distance to 106.1 miles. I note the current world record for that band is 324 miles, held by G4BR8 and GM30XX on 14-8-76."

Ed VK4ZEE in Townsville sends a message to say he now also has the call of VK4NFR, and will be living there until September after which he will be moving to Longreach after having a wife place a ball and chain on him. Active stations on six and two metres in the Townsville area include VK4RO, VK4GS, VK4ZJT, VK4JH, VK4ZEE, VK4ZBJ, VK4MS plus VK4BF on 2 metres. Those with 432 MHz capability are VK4RO, VK4JH, VK4ZEE, VK4GD, VK4MS and VK4AM. (It's good to see so many stations setting themselves up for extra bands and hope results will be worthwhile.—SLP.)

Ed also advises VK4ZRO will be shifting from Brisbane to Townsville for two years, and that the

VKARTL beacon has been heard in Hawaii strongly on occasions this year. Additionally, VK92M on Willis Island monitors 144.1, 52.050 and Townsville repeater R42. On 6 metres he uses an IC502 plus amplifier to produce 25 watts to a 5 el beam; on 2 metres an IC202 plus 100 watt amp to a 10 element and on 432 MHz hopes to be soon running 10 watts and working through Oscar. Thanks, Ed, for the news.

I am working towards a separate article for Amateur Radio to appear in the August or September issue on the subject of the six metre band and a few other relevant matters. This article will be based on facts, figures and thoughts and ideas received from various interested operators of the six metre band via your letters. I hope you will take time to read it and digest the thoughts thoroughly, and see what can then be done.

As I now want to go out to the shack and see if anything is happening on 2 metres I will close with the thought of the month: "Statistics are like sausages. You have to ask who made them, who cooked them, and who swallowed them." Thanks to John VK2ZKU, of Broken Hill, for that one, it came a long time ago and I lost it until recently.

73. The Voice in the Hills. ■

AUSTRALIAN 10 GHz RECORD

On 14-5-78 at 0425Z Stan VK4ZSH contacted Nev VK4ZNC over a distance of 106.1 statute miles on the 10 GHz band. Reports were 5 x 7 both ways with OSB.

VK4ZSH transmitted on 10.194 GHz from Springbrook Mountain 3100 feet a.s.l. and VK4ZNC transmitted on 10.050 GHz from Howells Knob 1842 feet a.s.l. The path was slightly obstructed by Mt. Tamborine, 25 miles north of Springbrook, which accounts for the QSB (Fresnel zone obstructions).

Transmitters ran 100 mW Gunn diodes 150 kHz [F3] deviation. Aerials 19 dB horns. Receivers used firstly a high IF of 144 MHz and then a low IF of 10 MHz with a VCO down converter with AFC. The microwave side of things was a burglar alarm module with a higher power diode inserted (\$50.00) and 1N23 receive mixer in separate cavities feeding into the gne horn.

Stan recommends strongly against anyone else using high power Gunn diodes as they are prone to severe instabilities (broadband spectrum generators) and it would be virtually impossible to get them working satisfactorily without a 10 GHz spectrum analyzer.—VK5LP. ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

OSCAR 7

Although this satellite now appears to have stopped its mode jumping, a number of reports have been received concerning noise and audio distortion. OSCAR 7 at times completely disappears for minutes. The passes in which these anomalies occur are not frequent, but the irregularities are obvious at the time.

A number of explanations have been offered, such as wobble or rolling of the spacecraft.

However, I passed this query to Harry JA1ANG, who is the AMSAT Asian Pacific Net Co-ordinator, for his comments, and he stated he had also had similar reports, mentioning that OSCAR 7 when in Mode B had developed a slight problem: under certain conditions it went into oscillation and periodically rolled.

OSCAR 8

As this spacecraft was built primarily because the Phase III spacecraft would not be available until late 1979, OSCAR 8 has now been in orbit 115

days to the 30th June, 1978, and has completed 1623 orbits to that date.

For the first few weeks after its launch, orbit times varied, but now it appears to have stabilized, making it much easier to establish an accurate prediction.

In comparing reports from Japan via Harry JA1ANG he states that OSCAR 8 signals are superior to OSCAR 7, this being more noticeable when in Mode J; this is, however, contrary to what has been found here, but could be due to the change of the circular polarization of the antennas.

PHASE III

Now that OSCAR 8 has been launched and performing satisfactorily, we await the launch of the revolutionary PHASE III spacecraft.

Design work will be completed during 1978, as will prototype of Transponder, Computer, Attitude/Stabilizer and Power Systems.

PHASE III is now destined to fly on the ARIANE 2 launch from FY7 in December 1979 into an elliptical orbit with a 932 miles perigee and a northern 24,249 miles high apogee.

I am sure all those amateurs interested in Satellite Communication will be looking forward to the launch of this bird. ■

ORBIT PREDICTIONS — AUGUST 1978

OSCAR 7				OSCAR 8			
Date	Orbit	Time Long	Z	Date	Orbit	Time Long	Z
1	16957A	0053	71.7	1	2069A	0059	54
2	16980B	0147	85.3	2	2082A	0104	55
3	16982B	0047	70.2	3	2095A	0109	56
4	17005A	0141	83.8	4	2110A	0114	58
5	17017B	0040	68.6	5	2124J	0119	59
6	17030B	0134	82.2	6	2138J	0125	60
7	17042A	0034	67.0	7	2152A	0130	62
8	18055B	0128	80.6	8	2165A	0135	63
9	17067B	0027	65.5	9	2180A	0140	64
10	17080A	0122	79.1	10	2194A	0002	40
11	17092B	0021	63.9	11	2208A	0007	41
12	17105B	0115	77.2	12	2222J	0012	42
13	17117A	0105	62.4	13	2236J	0017	43
14	17130B	0109	75.9	14	2250A	0022	45
15	17142B	0008	60.8	15	2264A	0027	46
16	17155A	0010	74.4	16	2278A	0033	47
17	17167B	0002	59.2	17	2292A	0038	49
18	17180B	0058	72.8	18	2306A	0043	50
19	17193A	0151	85.6	19	2320J	0048	51
20	17205B	0050	71.3	20	2334A	0054	53
21	17218B	0144	84.8	21	2348A	0059	54
22	17230A	0044	69.7	22	2362A	0104	55
23	17243B	0138	83.3	23	2376A	0109	56
24	17255B	0037	68.1	24	2390A	0115	58
25	17268A	0131	81.7	25	2403A	0120	59
26	17280B	0031	66.6	26	2417J	0125	60
27	17293B	0125	80.2	27	2431J	0130	62
28	17305A	0024	65.0	28	2445A	0136	63
29	17318B	0119	78.6	29	2459A	0141	64
30	17330B	0118	83.4	30	2473A	0003	40
31	17343A	0112	77.0	31	2487A	0008	41

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 74, Graters SA, 1552

BLUE MOUNTAINS AMATEUR RADIO CLUB AWARD

This certificate is available to amateurs who make five different contacts with members of the Blue Mountains Amateur Radio Club as from 3rd April, 1978.

Applicants should forward 50c in stamps, money order or a personal cheque to VK2AUX, VK2NCM, 80 Old Bathurst Road, Blaxland, N.S.W. 2774.

Applications should include five call signs contacted, dates, frequency, mode, names and GTH.

DXCC COUNTRIES LIST

Delete FH: Comoros. Only contacts made before

6/7/1975 count towards this country.

Add DE: Mayotte. Only contacts made after

5/7/1975 count for this country.

WAC — WORKED ALL CONTINENTS

- The award is available to licensed amateurs.
- Contacts after 1945 are valid.
- Applicants should send cards to their IARU member society who will then certify the claim to the HQ society (ARRL) for issuance of the award. Where such a society exists applicants must be members of the society. Canadian amateurs send QSL cards to ARRL HQ.
- Contacts must be made from the same location — the "same location" being taken as an area not exceeding 25 miles (40 km) in diameter.
- The award is normally issued for CW/Phone but endorsements are available for 2 x SSB, all 80 metres or all 160 metres.
- There is no fee for the award.

Requirements: One confirmed contact is required from each of the six continents — North America, South America, Europe, Africa, Asia and Oceania.

FIVE-BAND AND SIX-BAND WORKED ALL CONTINENTS AWARDS

The following rules apply:

- The basic award shall be known as "Five-Band Worked All Continents" ("5BWAC"). An endorsement for "Six-Band Worked All Continents" ("6BWAC") shall be available upon submission of proof of this additional accomplishment.
- Applications shall be sent by the applicant, accompanied by the originals of the required confirmations, to the HQ of the member society for the country in which he resides. The HQ of the member society shall then examine the application and, if it is found to be satisfactory, shall so attest to the HQ society, ARRL, which shall issue the certificate and deliver it directly to the applicant. If the applicant resides in a country not represented in the Union, the application shall be sent directly to ARRL.
- Where the applicant resides in a country which is represented in the Union, it shall be necessary for him to hold membership in the representative member society in order to be eligible for the award.
- The continental boundaries defined in the WAC rules shall apply to 5BWAC and 6BWAC.
- To be used toward the award, contacts must be made from one station (in terms of licence and call letters, but not necessarily of equipment) operated at one location. The term "location" shall be construed as representing one metropolitan area, or, alternatively, an area not exceeding 25 miles (about 40 km) in diameter.
- Contacts must be made on or after 1/1/1974 to be used in qualifying for this award.

ASHBURTON NZ CENTENNIAL AWARD, ASHBURTON RADIO CLUB

Duration: 1st July to 31st August, 1978.

Rules:

- 60 points to qualify for the award. VK and DX stations 40 points.
- All bands from 160 metres to 1295 MHz. All modes.
- Each Ashburton station contacted will be credited 10 points. Contact with Club station ZL3AF is compulsory.
- Repeat QSOs not valid.
- Two-way QSOs via OSCAR will be awarded 20 points per QSO.
- QSL cards not required.
- All stations in Ashburton may be contacted twice BUT NOT IN THE SAME MONTH.
- There is no charge for the award.
- SWL award on a "Heard" and report of stations RS(T).
- Time limit of three months after 31/8/1978 for application for the award.

Previous holders of the Ashburton Centennial Award will, on request, be awarded a special merit seal to attach to their award.

Application for the award to:

Vern Lovett ZL3AQ,
148 Alford Forest Road,
Ashburton, NZ.

The following are the most active and should be readily available:

ZL3AF Branch station, ZL3AG George, ZL3AQ Vern, ZL3AR Barry, ZL3FA Graham, ZL3FN Dick,

ZL3Q Bili, ZL3L Andy, ZL3LG Colin, SUN Lex, ZL3AAN Max, ZL3AF Ken, ZL3CX Mike.

VHF only: ZL3ATK Reg, ZL3TJZ Dns, ZL3TJG Alan, ZL3TKK Alan, ZL3TIX Phil, ZL3TFS Dave.

* These stations are also on VHF.

WICEN

WHY BOTHER WITH WICEN?

Have you ever thought about how many privileges Amateur have compared to other radio services? We pay half the cost of a commercial mobile licence for any number of transceivers, fixed or mobile (only radios used by emergency services have a lower licence fee), we can use any type of transceiver using many different modes, whereas all other services must use type-approved equipment, we can use aerials with any amount of gain and our frequency allocation is second only to the military services.

This privileged position was achieved due to amateurs playing vital roles in the development of radio communication but due to the high cost and high level of technology achieved today it is almost impossible for amateurs to contribute as they have in the past when so many major laboratories are spending small fortunes in this field.

The only way to justify our position is to look upon the Amateur Service as a reserve of experienced operators with their own communications equipment who can use their spectrum allocation to practise and develop their capabilities until required in an emergency to provide vital communications that may save lives. If you feel that you will provide the required service when the need arises, because you are an experienced amateur then I suggest you take part in one WICEN exercise and you will realise that there is far more to being a good message handler than just being a good amateur operator. Of course there will be many amateurs who just can't find the time to become WICEN operators, but they can still contribute by sitting back and leaving the channel clear while a WICEN exercise "hogs" one or two of our thousands of channels.

Remember that our public image may ultimately make the difference between a bright future or no future for Amateur Radio, and surely if WICEN can provide a service to the community it will be the best form of public relations exercise Amateur Radio could provide.

Mike Richter VK2BMM,
NSW WICEN Deputy Co-ordinator.

INTERNATIONAL NEWS

Publication of the FCC's 8th Notice of Enquiry in the USA gives some further glimpses into amateur affairs leading up to WARC 79.

The first amateur band on the list is 1850 to 1900 kHz as a proposed exclusive world-wide allocation and 1900 and 2000 kHz, shared. The next is the band 3500 to 3600 shared in Region 1 with Fixed and Mobile (except aeronautical mobile), 3500 to 3900 exclusive in R2 and 3500 to 3900 in R3 shared with Fixed and Mobile. In addition 3900 to 3950 is shown as shared.

The next band is 40m where they recommend 6950 to 7250 kHz for amateurs (6950-7100 includes Amateur Satellite) for Region 2, 6950-7250 in R1 and R3. The comments about this band was that the FCC shared ARRL's concern regarding broadcasting operations but are confident that the overall solution which they propose for HF broadcasting (in 5th NOI) will result in more disciplined operation.

Next on the list is a new exclusive amateur band from 10100 to 10200 kHz proposed for all three Regions. 14000 to 14350 kHz exclusive is unchanged (Amateur Satellite Service 14 to 14.25). Another new band proposed for exclusive amateur use in all regions is 18068-18168 kHz. 21000 to 21450 remains unchanged except for the addition of 20950 to 21000 kHz. Then comes a new band exclusive for both amateur Services 25110 to 25210 kHz. The table continues to list 26960 to

27230 kHz for amateurs in Australia and New Zealand. 28 to 29.7 MHz remains unaltered.

Proposals for the 6m band for amateurs refers only to Regions 2 and 3 where the allocation is shown as 50 to 54 MHz. In R1 47-49 is for broadcasting. Numerous footnotes remain including Footnote 246.

144 to 146 MHz is shown as exclusive for both amateur services in all Regions, with 146 to 148 MHz as amateur exclusive in R2 and R3 but for fixed and mobile in R1. Most of the allocations from 136 to 144 refer to space research and space operations or in the case of R1 includes aeronautical mobile from 138 MHz. No broadcasting is shown for these segments.

In Region 2 amateurs are included in 220 to 225 MHz shared with Radiolocation and Mobile.

For 70cm the proposals remain 420-450 MHz for R2 and R3 but only 430 to 440 MHz, as now, for R1. There is a modification to footnote 320A which proposes additional band segments for the Amateur Satellite Service on the existing harmful interference conditions for 1250 to 1260 MHz, 2390-2400 MHz, 5050-5070 MHz, 75-81 GHz, 165-170 GHz and 240-250 GHz. For R2 a shared amateur allocation (secondary) appears at 902-928 MHz where the primary services are fixed and radiolocation.

1240-1300 MHz includes amateur as a secondary service for all Regions to Radiolocation. 2300 to 2450 MHz includes amateur as a secondary service in all Regions. 2450 MHz \pm 10 MHz is proposed to be designated for the wireless transmission of power, space to earth and space to space. An amateur shared allocation from 3300 to 3500 remains in R2 and R3. Amateur is still shown secondary from 5650 to 5850 MHz in all Regions and 5850-5925 MHz in R2. 10000-10500 MHz remains in all Regions for amateurs on a secondary basis to Radiolocation. 24 to 24.05 GHz continues exclusive in all Regions for the two amateur services plus 24.05 to 24.25 GHz for amateur shared with radiolocation as the primary service as usual.

After that the proposed amateur bands for all

Regions are 49.8-50 GHz, 75-81 GHz, 165-70 GHz, 240-240 GHz and all above 300 GHz.

All the above is necessarily a very brief resume of a voluminous document. Another new footnote is proposed, namely, that 3790-3800 kHz, 7240-7250 kHz, 10190-10200 kHz, 14340-14350 kHz, 18158-18168 kHz, 21440-21450 kHz and 25200-25210 kHz be allocated to the amateur service on a world-wide priority basis for use by stations covering the scene of a natural disaster. Such world-wide priority is to be afforded to communications by or with stations operating at the scene and during the time of the declared natural disaster.

It is again emphasised that all the above reports proposals in the USA's 8th NOI.

QSP

JARL VISITOR TO VK

JARL Director, Professor Masakazu Ohtsuka ("Masa") JASAF, and his XYL with Peter Dodd, WIA Secretary and Business Manager, and David Wardlaw, the Federal President (R). Masa visited Melbourne and Sydney on a flying package tour early in April and is the author of numerous electronics reference books.



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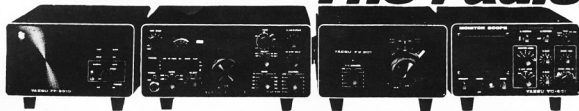
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- YC-500-E model — 0.02 PPM;
- YC-500-S model — 1 PPM;
- YC-500-J model — 10 PPM.

Display Digit: 6 digits.

Display Time:

- 0.1 or 2 seconds.

Counting Time: 0.001 or 1 second.

Input Voltage:

- Input 1 — 25 mV to 20 V RMS;
- Input 2 — 100 mV to 2 V RMS.

Input Impedance:

- Input 1 — HIGH 1 Meg, LOW 50 ohms;
- Input 2 — 50 ohms.

Input Capacitance:

- Input 1 — Less than 20 PF;
- Input 2 — Less than 20 PF.

Operating Temperature: 0 to 40°C.

Power Requirement:

- AC — 100/110/117/200/220/234 V;
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HK-707



HK-708



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Yaesu, the leader in quality communications equipment, proudly introduces the FRG-7000: a high performance general coverage receiver for the discriminating shortwave listener.

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• **Modes of operation:**

AM, SSB, CW

• **Sensitivity:**

SSB/CW — Better than 0.7 μ V for S/N

10 dB AM — Better than 2 μ V for S/N

10 dB (400 Hz 30% modulation).

• **Selectivity:**

SSB/CW ± 1.5 kHz (— 6 dB), ± 4 kHz (— 50 dB)

AM ± 3 kHz (— 6 dB), ± 7 kHz (— 50 dB)

• **Stability:**

Less than ± 500 Hz drift for any 30 minute period after warm-up.

• **Antenna requirements:**

Random wire for 0.25 — 1.6 MHz 50 ohm unbalanced feed for 1.6 — 29.9 MHz

• **Speaker impedance:**

4 ohms

• **Audio output:**

2 watts

• **Power requirements:**

100/110/117/200/220/234 VAC, 50/60 Hz

• **Power consumption:**

25 VA

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360(W) x 125(H) x 295(D) mm

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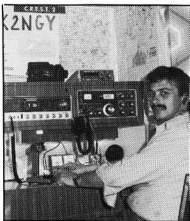
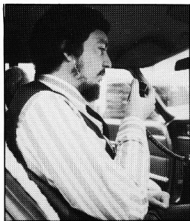
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PLEASE ACCEPT OUR APOLOGIES

When we published the first issue of **AMATEUR RADIO ACTION**, we greatly underestimated the market, and in consequence, many would-be readers were unable to obtain a copy before it sold out. We can only offer our sincere apologies and advise that stocks to newsagents have been greatly increased — but we still suggest that you be early.

ALSO OUR THANKS

Publishing the first issue of anything is invariably a testing time on the nerves — your acceptance of **AMATEUR RADIO ACTION** proves to us that the magazine is on the right track. Sure, there were (and undoubtedly still are) areas which can and will be improved but, overall, your response was extremely favorable and for this, we thank you.

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DIVISIONAL NOTES

VK2

NOTICE OF RE-CONVENING OF SPECIAL GENERAL MEETING

NOTICE IS HEREBY GIVEN that the Special General Meeting of the Wireless Institute of Australia, NSW Division, held on 28 October, 1977, and adjourned on that date, will be re-convened at 14 Atchinson Street, Crows Nest, on FRIDAY, 28 JULY, 1978, at 2000 hours.

BUSINESS

1. Further consideration of the proposed revision of the Articles of Association of the Wireless Institute of Australia, NSW Division.

The following officers were appointed at the first Council meeting for the current year.

Phil Card VK2ZBX — Vice-President, Repeater Officer, and also Liaison for—City, RTTY Group, VHF and TV Group, Newcastle, Far North Coast and Central South Coast.

Gareth Davey VK2ANF — Broadcast Organizer and Editor, Council Minute Secretary and Liaison Officer for Central West Zone.

Henry Lundell VK2ZHE — Property Officer for Dural and Crows Nest, also Engineer for Dural and Crows Nest.

Tim Mills VK2ZTM — Secretary, Treasurer, Sale of Publications, Federal Councillor and Duplication Officer.

Mark Salmon VK2OI — Publicity for and Applications from New Members, Liaison Officer for OSL Bureau, WICEM and South West Zone.

David Thompson VK2BDT — President, Council Chairman and Assistant Treasurer.

Keith Woodward VK2AT — Vice-President, Monthly Meeting Chairman, Mini-Bulletin Editor and Producer, Educational Officer, Liaison Officer with Amateur Radio and the Shire of Great Lakes.

After the Special General Meeting announced above it is hoped that we will be able to continue our programme of interesting lectures and functions for the remainder of the year. The August General Meeting will feature the lecture "Sugar Coated Oscar 8", aptly presented by Gill Spencer VK2JK. The accent will be pleasure not business, and your presence will make the night more enjoyable. Bring an interested friend, as visitors are most welcome.

73 de VK2AT

VK3

THE MEN IN THE ROOMS

four amateurs pictured have helped the Victorian Division WIA by voluntarily manning the Division's office at 412 Brunswick Street, Fitzroy, on Tuesday, Wednesday and Thursday.



Between them they represent 105 years of amateur radio, oldest licence 1935, newest 1974.

In addition, Roy is outdoors OSL Manager and Mike is Divisional Librarian.

A tradition has been established called "lunch with the boys" — all welcome — join them about midday for a counter lunch at the Moonee Valley Hotel, just one block south of the rooms.

The Divisional Council has expressed thanks to the "men in the rooms" and would welcome any others that would like to help.

IARU NEWS

The Executive, in May, voted in favour of the admission of the Grenada ARC and the Association des Radio Amateurs du Senegal.

In the Special Report on the 1978 Federal Convention in this issue mention was made of seeking international agreement for RTTY frequencies on HF. These seem likely to be the segments discussed at the IARU R1 Conference in Hungary during April. The RSGB had recommended the following — 5800-5900 kHz, 7035-7045 kHz, 14075-14100 kHz, 21080-21100 kHz and 28080-28100 kHz. This matter is still to be discussed by the Federal RTTY Committee.

20 YEARS AGO

Ron Fisher, VK3OM

JULY 1958

Where are Australian Amateurs heading? This question was posed by the Editorial of the July 1958 Amateur Radio. With an ITU conference around the corner at that time, it proves that there is nothing new under the sun. Maybe things have changed to some extent but the last section of the Editorial is worth repeating. "The worth of the Amateur to any country can't be weighed by how many times he operates in a week or whether he is actively on the air at all. It's his knowledge that is valuable and it is time that the amateur himself woke up and told a few people that fact. 'Use them or lose them' . . . as we often hear mouthed should be a minor worry. It's the support of our communications people we expect right now. In light of present day developments, what do you think?"

A new Receiver Tuning Principle. In other words enter the Wadley system of receiver tuning. The first receiver to make use of this was the famous Racal RA-17. Many will remember the Delta-hat and of course today we have the FRG-7, SSR-1 and the Barlow XCR-30, all of which use this same system. The article was reprinted from March 1958 QST.

Part five of Amateur Television by Eric Cornelius described the video mixer and switching set-up.

Reading and Writing for Em-erg-en-cy Net Op-er-a-tors. Norman Burton BERS11494 took a lighthearted look at the new NATO phonetic alphabet. Noted too was that the authors' views were not necessarily those of the publishers.

Two antenna articles completed the issue. 21 Mc. Quad for 300 Ohm Feed by J. W. Edge VK2AJO and Adjustment of Gamma-Matched Parasitic Beams reprinted from March 1958 QST.

HAMADS

- Eight lines free to all WIA members. \$9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
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- Closing date: 1st day of the month preceding publication. Cancellations received after 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Club Book.

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External VFO FV161, as brand new, \$100; trapped vertical with 80m resonator, \$90; Swiss quad, 15m, brand new, set erected, \$110; Swiss quad, 10m, brand new, \$100; 10m W whip, \$15; Realistic, 10m, 23 ch., \$125; gutter mount ant., \$5. VK3NFV. Ph. (03) 878 9278.

Collins 51 S1 Rx, 2-30 MHz coverage, AM, SSB, CW, 240V, definitely mint cond., ex factory, same styling as "S" line series. Ph. (02) 547 1467.

Barlow Wadley Rx, little use, in original carton, with manual, \$190, or offer. Swan MB40A mobile transceiver for 40m, with mark helix antenna and manual, \$280, or offer. K. Blume VK2BJK, QTHR. Ph. (02) 449 1598.

Trio 95R5D Rx, 550 kHz to 30 MHz, with bandspread, AM and CW/SSB, \$110; AWA MR3 with channel 40 xils, 3/10 final, most minor components renewed, \$30; 6m 5 el. Yagi, \$30; AM modulator, 10W, audio, Electronics Aust., January 1965, \$30; large home-made power supply to drive about MR3 or modulator plus other equipment, \$25. VK2BMD. Ph. (02) 868 2585 A.H.

Yaesu FT75B HF Transceiver, with AC and DC power supplies, 3 xlt locked ch. on 80 through 20m, 1 xlt for 15 and 10m, brand new condition, with instruction book, \$390. VK2JD, QTHR. Ph. (02) 639 8020.

Hallcrafters HT32 SSB/CW Tx, 100W PEP output with two 6146 PA tubes, 10-11-40m, supplied with as New Dastatic D104 mic, and owner's manual, matching Hallcrafters SX115 10-80m, WWV CW-SSB-AM ham band rx, with variable IF selectivity 10-150 kHz, 5 kHz 10 kHz 5 kHz calibration, 1000 Hz notch filter, variable BFO pitch control, matching Hallcrafters comm. spkr. and owner's manual, Hallcrafters best over Rx, both in mint cond., \$475.00. VK2JD, Ph. (02) 36 7755.

Bondwood Caravan, fitted out as shack, needs finishing, \$160; Hallcrafters SX101 Rx, ex. cond., \$210, ONO; 60 W Hz Rx, \$15; large rotary inductance, \$5; box bits, \$10. VK3AWD, QTHR. Ph. (03) 338 8574.

Complete Station Sellout. Kenwood TS502S-DG5 control, digital display, TV508 6m transverter; Hidaka 80 K trapped vert. inc. hardware and instructions (needs little tuning), 10-80m; Hidaka 200L "Classic" full size 14 MHz monoband Yagi 8.5 dB i/gain, 25 dB B/F; Kyokuto 146-148 MHz FM Tcvr, repeater/anti repeater, digital readout. All in near perfect condition. No offers! Lock, stock and barrel, \$1,200. VK8BG, c/- VK8NT. Ph. (089) 27 3988 A.H.

TR-44 Rotor, control unit, manual, good order, \$90; MFJ super log speech processor, as new, \$30. VK2AOU, QTHR. Ph. (02) 53 9789.

Yaesu YO301 Monitor Scope, little used, excellent cond., \$300. VK5ZCW, QTHR.

Communic. RX, portable, National Panasonic Cougar 2200, phase locked loop, 100V AC or 12V DC on 4 x "D" cells, full coverage 3.9 to 28 MHz in 6 bands of 4 MHz, AM/CW/sideband BFO, 76-80 MHz FM, 180 deg. gyro ant., 125 xlt calib. RF gain control, wide and narrow selectivity, ext. ant. con. plus whip, \$195. Ph. (047) 93 1144.

Atronics Code Reader, with teletype interface, model 15 teleprinter and Hewlett electronic keyer, produces hard copy from CW at up to 60 w.c.m., \$300 for the lot or will separate. VK2BHF, QTHR. Ph. (02) 88 6249.

3 Scalar 6 Foot Heavy Duty Mobile Helicals for 80, 40 and 20m, fully adjustable at tip, high power rating, heavy duty spring base goes with lot, \$100, ONO. Cost \$150 last September, used only for rally. VK3OT, QTHR. Ph. (055) 72 3168, bus. only.

Electronic Keyer, as EA March 1978, at less than kit price, \$35. Works well. VK3AVQ, QTHR. Ph. (03) 385 5524.

Yaesu FT101B Transceiver, with external VFO, speaker and mic., top condition, owner going solid state, presently in regular use. Offers requested. P29BS, QTHR.

Hallcrafters SX28 Rx, 55 MHz to 42 MHz, amateur bands calibrated, complete, in working order; Viceroy KW Tx, 80 to 10m, 160W peak with power supply, in working order; BC839 VHF Rx, 90 to 158 MHz, AM complete with matching power supply, in working order; AT 21 AMT 150 Tx, less osc. compartment, wiring complete with matching power supply; all above units with workshop manuals; coaxial dipole, 146 MHz, commercially made, complete with 6m UR67 coaxial cable. Offers to VK4AO, QTHR.

Twin SWR and PWR Meter, SML 25, as new in box. \$15. Dalwa low pass filter, new in box, \$8; new Microna resistance-capacity, substitution box, \$8. Ph. (03) 467 2131, Bus., or (03) 460 7450 A.H.

Pye FM789, 2m FM portable, 8W, fitted ch. 1, 2, 3, 4, 6, 7, 8, 40, 50, Dryfit batteries, 12V (run or charge direct from car, or 13V PS), 1/4 wave whip fits BY BNC to allow coax connection, telephone handset, RX sensitivity excellent, full handbook, \$175. VK1ZBL/VK1NAK, QTHR. Ph. (062) 81 0067.

Tx, Collins 171-L, 144-148 MHz, 20W, hybrid circuit, ml. (aircraft) transmission, synthesized every 50 kHz (WIA channels), AM/CW, suitable at F.Ming, complete ml. handbook. Requires 28V 7A fan blower. Autotune using coded control lines, \$60; AVO VTVM, model ETM4, Incl. RF probe, \$30. VK1ZBL/VK1NAK, QTHR. Ph. (062) 81 0067.

Yaesu FT101B with G3LL clipper, as new, \$670. VK2BHE, QTHR. Ph. (066) 21 2211 Bus. or (066) 24 1447 A.H. (Fred Herring).

2m Transceiver, AWA MR5, transistor PS, with repeaters 2, 4, 6, 8, Simplex 40, A. excellent condition, with original manual, \$85. VK3KZS, Ph. (03) 65 6046, ext. 608, bus.

IC22 10W 2m Mobile, crystallized for repeaters 1-8, reverse 2-8 and 6 Simplex channels, with mike, manuals, etc., excellent condition, \$195 ONO. Ray VK1ZJR, QTHR. Ph. (062) 88 5624.

Yaesu FT75B, FP75B, packed in original cartons, mint condition, 6 months old, no work, xils, as supplied, suitable Novice 30W full call 50W output, \$380. VK7NAB, 3 Denman Road, Trevallyn, Launceston, Ph. (003) 44 4172.

Video Shack Clearout — B&W video recorder, AC operation, new video heads, \$290. Sanyo viewfinder video camera, complete, \$350. Video, audio RF modulator H/B, \$90. BWD 509 Cro., \$150. All A1 condition. 432 MHz Tripler, final using 2-2C3BA's H/B, \$100. 500 MHz DF counter H/B, needs debugging, \$80. VK5ZEE, QTHR. Ph. (06) 277 2547.

Icom IC22 2m Transceiver, complete with mobile bracket and operator's manual. Repeaters 2, 4, 6, 8, Simplex 37, 40, 49, 50, \$170. AC power supply, \$20. VK322, 2 Daigety Street, Brunswick West, Ph. (03) 380 6991.

SB101, SB500 Heathkit transceiver and 2m transceiver, re-valued, matching xthr. and power supply, handbooks, \$400. VK3SP, QTHR. Ph. (03) 842 1841 A.H.

Icom 215 2m FM with R2, R6, R7 and ch. 50. Icom 502 6m SSB. Both with original cartons, had little use, \$170 each. Hammarlund HQ170 HF Rx with service manual, \$100. P. Fraser VK2BVM, QTHR as VK2ZTY. Ph. (062) 49 2222, 0830-1230h, Mon-Thur.

FT101E, latest model, complete with all xils, man., mic. and spare valves, approx. 9 months old, in mint condition, hardly used, \$700. VK2ABB, QTHR. Ph. (02) 520 0866.

Communications Rx, Drake SSR-1, 0.5-30 MHz, 12V DC or 240V AC, CW, SSB, AM, very stable, as new, \$245. VK3UJ, QTHR. Ph. (03) 874 5632.

2m IC22 Transceiver with repeaters 2, 3, 4, 5, 6, 7, 8, Simplex 40, 50, little use, in good condition, complete with mobile ml. bracket, manual and original carton, \$175.00 ONO. AWA MR6a transceiver, repeaters 3, 4, 8, Simplex 40, 50, good condition, with manual, \$175.00 ONO. VK2AGY, QTHR. Ph. (02) 789 2401 bus., (02) 601 1221 A.H.

Triangle Telephoto Antenna Mast, outer section 20ft. high, inner section 30ft. high, provision for in-mast rotator, six months old, sell for less than half price, \$150.00. VK2NPW, 22 Woodside Ave., Burwood, 2134.

Atlas 215 Transceiver, with matching AC power supply, this model is approximately three years old and is not fitted with a noise-blanker. Price \$700.00 ONO. Michael Goode VK3BDL. Ph. (03) 61 2701 bus. or (03) 99 1806 A.H.

Kenwood TR740DA, 2m FM transceiver, 800 channels, 30W out, excellent condition, \$330. VK2BMR, QTHR. Ph. (02) 871 5710 A.H.

Icom 215 2m FM, rpts., 2, 4, 5, 6, chan. B and 50, as new, in original carton, Wayne Rhodes VK6AM, C/- P.O. Bussellton 6280 or Ph. (097) 55 4105.

Carphones AWA MTR10, with xtals for repeater ch. 2 and simplex 40, MR20 on 52.525, AC power supply for above, Pye carphone, 12V, Repeater 2, Simplex 40. Home brew DSB, complete station. Portable DSB AC, complete station. AWA All-band Rx. Sig. generators. Sig. tracer and VTV. Numerous valves, old and new types. All above in good working order. Will accept any reasonable offer. VK2EI, QTHR. Ph. (02) 99 1204.

WANTED

HF Transceiver, FT200 or similar, under \$400. VK3AWD, QTHR. Ph. (03) 338 8574.

2m IC22-A, in good condition, unmodified, with xtals for popular rpts. VK2ABC, QTHR. Ph. (02) 451 1313.

FP75B and AM/SSB 27 MHz Transceiver, suitable for conversion or converted to 28 MHz. VK4NAX, 23 Drummer St., Tooloos Est., Gladstone, 4680.

ARRL Handbooks: 1923 to 1946, will pay \$8 to \$10; 1955 to 1969, will pay \$8; 1972 to 1974, will pay \$8. Will pay packaging and posting also. Please contact A. C. Garnett VK3CAQ, 117 RTC Road, RAAF, Laverton, 3027.

Tx or Tcxr 19m-80m, also Tri-band HF Yagi and rotator. Particulars to L30778, QTHR. Ph. (060) 24 4306, A.H. (060) 24 1852.

Valve Tester, must be in good order and with all information of it and the tubes tested, these to include usual FA 572B, 813, 811A and 6146 etc. John A. Taylor VK3AJT, QTHR. Ph. (052) 78 2273.

Plug-in external VFO for FT75B for a needy ZL friend. Please contact Dusty VK3AYO, QTHR.

Obscure Radio equipment, amateur, professional, ex-Govt., ex-Army, etc., any condition, full details including price, please. For private collection only. L70107, QTHR. Ph. (002) 63 7112.

SOS — Can anyone supply 12CB or 688 valve — Thank you, VK2ANG, QTHR.

Swan 410 VFO, Ian Dunlop, 9 James Street, Murwillumbah.

EXCHANGE

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STOLEN

Stolen from the WA VHF Group Car Park, my Yaesu FT2FB 2m FM Tcxr with Icom microphone. Unit has been repainted a semi-shiny black. Channel selector marked with actual frequencies of: Ch. 40, 50, 51, 144.5, 145.85, Rpt. 2, 4, 6, 7, 8. Anti Rpt. 2 and 4. VK5YL, QTHR.

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SILENT KEYS

It is with deep regret that we record the passing of —

Mr. R. MAXFIELD L70120

MATT BRANE VK3SL

Matt passed away suddenly on May 28th, 1978. His death came as a shock to everyone who knew him. Matt was mainly active on 2 metres and 80 metres, and was also well known as a result of late-night cross-band contacts to 160 metres. After studying as a law undergraduate at Melbourne University, Matt was quite active giving CW practice on some of the more off-beat 2 metre FM channels and on 80 metres as well. Recently he also obtained his Restricted Radio Telephony Operators Certificate for seaborne use, and had lately been spending time during the weekends monitoring marine frequencies as part of the Technical Division of the Australian Volunteer Coastguard. His main station was located at North Guelong, and during the week operated portable at Brunswick.

Matt was only 34. His funeral was very well attended, and included many of his amateur friends. The WIA would like to extend its deepest sympathy to his wife Anna, his family, and many friends.

SES GABB VK5GP

Ses Gabb VK5GP and his wife, Winnifred, died in a tragic car accident whilst returning to Nairne from Adelaide. Ses was licensed in 1950 and was postmaster at Nairne. He was a friendly person with a ready sense of humour.

The loss of Ses will be felt by many members of the amateur community. Ses and Winnifred will also be missed by their five children of whom they often spoke with pride and affection. We express our sympathy to their family and friends.

(From Alan Bolton VK5TT)

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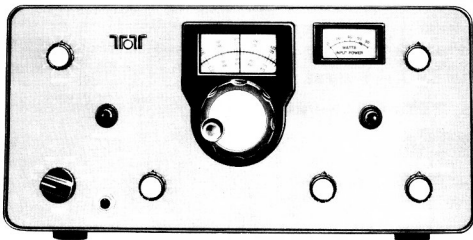
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